DELAWARE COMPREHENSIVE OUTDOOR RECREATION PLAN

DELAWARE STATE PLANNING OFFICE

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Delaware Comprehensive Outdoor Recreation Plan

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Delaware State Planning Office
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530 S. duPont Highway
Dover, Delaware 19901

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State Department of Natural Resources and Environmental Control

- Fish and Wildlife Division
- Parks, Recreation and Forestry Division
- Environmental Control Division
- Soil Conservation Division

State Division of Archives and Cultural Affairs

State Division of Highways

U.S. Soil Conservation Service

Bureau of Outdoor Recreation, Regional Office, Philadelphia

Planning Department, City of Wilmington

New Castle County Planning Department

New Castle County Parks Department

Kent County Planning Department

Sussex County Planning Department

The interest and assistance of these individuals and agencies during the course of this study was especially appreciated.

D.S.H.
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DOVER, DELAWARE 19901

David R. Keifer
DIRECTOR

November 1, 1970

The Honorable Russell W. Peterson
Governor of the State of Delaware
Legislative Hall
Dover, Delaware 19901

Dear Governor Peterson:

It gives me great pleasure to submit to you the Delaware Comprehensive Outdoor Recreation Plan. This report is the product of an on-going planning program which evaluates the supply and demand for outdoor recreation resources in Delaware and developes a program and plan of action to facilitate development and preservation of our outdoor recreation areas and natural resources.

This official outdoor recreation plan for Delaware, when approved by the Secretary of the Interior, will qualify our State for full participation in the Federal Land and Water Conservation Fund administered by the Bureau of Outdoor Recreation.

Sincerely,

David R. Keifer
Director

DRK/fb

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF SCHEDULES

INTRODUCTION

PURPOSE

This Outdoor Recreation Plan was undertaken as part of an updating and expansion of the initial plan, "Profiles and Plan: Outdoor Recreation in Delaware," State Planning Office, July, 1966.

This plan includes the findings of detailed inventory, demand and needs studies, as well as considerably increased details regarding uses of existing property and potential acquisitions.

The plan and its supporting documents are also intended as a further detailing of the Delaware Development Plan.

INTRODUCTION

The problem of what to do with leisure time and, in fact, the possession of leisure time, are relatively new to man. Two generations ago most Americans lived in rural areas and toiled at agrarian pursuits. Leisure was a rare reward for many hours of the hard labors of the preindustrial society. Outdoor recreation as a part of leisure pursuits, when available, was no problem. Opportunities for its enjoyment were just outside the front door.

As Perloff and Wingo have noted, however,[1]

> "the metropolitan transformation of American civilization is the commanding factor in the problem of outdoor recreation...an expanding industrial society must, perforce, be built upon cities, and as they have grown, and as the nation has taken on more and more the spirit of urbanization, the needs for contact with the natural environment have persisted, but the expansion of outdoor recreation opportunities has not kept pace.
>
> This problem has crept upon us because as a nation we have been preoccupied with the more urgent demands of the urban revolution: the need to overhaul and redistribute our housing stock, to revamp our transportation systems, to develop new urban institutions...For two generations we have accumulated a backlog of recreation needs..."

This transformation from agrarian to urban character is easily noted in the northeast part of the nation referred to as "megalopolis." It is also clearly noticeable in the Wilmington Metropolitan Area which experienced a population increase of over 40 percent in the 1950-1960 decade and an estimated 35 percent increase to 1967. These increases are directly comparable to growth rates in the surrounding megalopolis.

The transformation, however, is barely visible in most of Kent County and in all of Sussex County. Yet these areas contain the vast majority of Delaware's natural outdoor recreation resources. As a result, these areas provide the outlet for frustrated recreational desires which are not satisfied within the urban setting.

It is ironic that man has progressed so far in his industrial and technological development that he now has abundant leisure time but has left few outlets for its enjoyment. Indeed, in an intensified urban environment, if he still remembers the pleasure of the outdoors, he may well find that the readily available outdoor recreational opportunity is frustrated by crowded

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[1] Perloff, Harvey S. and Lowdon Wingo, Jr., "Urban Growth and the Planning of Outdoor Recreation," in Trends in American Living and Outdoor Recreation ORRRC Study Report 22, Page 83.

highways and beaches, by streams and lakes that no longer are safe for swimming or no longer support fish, by once rural roads that no longer give a glimpse of field or pasture, and by woodlands that vibrate under the thrust of machinery creating still more of the urbanization he seeks to avoid.

That these opportunities still exist in the non-urban portion of the State reflects not so much an interest in their preservation as a disinterest in urbanization. The fact that Delaware is rapidly approaching the degree of urbanization noted in its metropolitan setting and the relative shortage of available land within that setting requires foresight and action now if outdoor recreation opportunities are to exist in the future.

Decreasing hours of work, earlier retirement, longer vacations, and increased mechanization at work and at home are all contributing to increasing demand. This increasing demand must be accommodated in the most efficient manner, with the least destruction of our natural resources. As the Governor of Delaware, the Honorable Russell W. Peterson, has noted in an address before the Southern Governor's Task Force for Nuclear Power Policy:

> "We at the State level of government must add a new dimension to our planning activities....Our ultimate goal is to build a better quality life for our citizens....To succeed, we must seek to protect and nourish our most vital treasure — the quality of our environment."

The challenge is at hand. The demands are clear. The charge is to provide facilities for outdoor recreation while guaranteeing the maximum protection of the environment. This plan represents Delaware's program for meeting this challenge.

RECREATION PLANNING IN DELAWARE

In many respects, the history of recreation planning in Delaware can be assumed to begin with the establishment of the individual natural resources agencies. In 1879 the Delaware Game Protective Association, the forerunner of the present Division of Fish and Wildlife of the Department of Natural Resources and Environmental Control was authorized by the General Assembly. A three-man Board of Game and Fish Commissioners was established in 1911 for the purpose of protecting, conserving, and propagating wildlife in the State for recreational and economical benefits. In 1944 the first State wildlife area was established at Petersburg by a transfer from the federal government. Prior to 1913, the initiative for action rested with sportsmen who sought assistance from the state legislature. From 1931 to 1949, wildlife administration rested primarily with the political party in power which involved elected and appointed officials. Since 1949, administration has been increasingly delegated to career personnel with special formal training.

A State Parks Commission (now the Division of Parks, Recreation and Forestry) was created in 1934 and empowered to preserve and to protect the scenic, scientific, historic, and wildlife resources of the State and to make them available for public use.

Several parks were transferred from the Federal government to this Commission, but the first acquisition was not made until July 26, 1951, when Brandywine Springs was purchased.

The Forestry Commission was organized in 1927 for the purpose of managing and maintaining State Forests and making these lands available to the public for certain types of outdoor recreation. This agency is now part of the Division of Parks, Recreation and Forestry.

The concept of a published statement of the future direction of these agencies and their acquisitions is quite recent. The "State of Delaware Intrastate Water Resources Survey," published in 1959, included sections on Delaware's natural resource agencies. It recognized that the former Board of Game and Fish Commissioners must make every effort to preserve public hunting and fishing areas and to more efficiently utilize the existing areas. The study pointed out that plans for improving fish and wildlife resources should be included in any development program.

The "Intrastate Water Resources Survey" estimated that 14,260 acres of State park land will be needed in the year 2010 to accommodate Delaware's predicted population. Minimum estimates were made of water and land requirements needed for fulfilling the State's recreational obligation.

The study indicated the need for the former State Forestry Department to perpetuate and improve all forest covered lands, and to expand and update forest survey data.

In May, 1958, studies were begun by the Welfare Council of Delaware, any agency devoted to research and planning coordination for health, welfare, and recreation, in order to determine the State's responsibility in the field of recreation. In March, 1962, cooperating state, county, municipal and private outdoor recreation agencies submitted their studies to the Welfare Council. A coordinated report was prepared which was unanimously adopted. The plan was then reviewed and approved by the State Planning Council. In order to implement the plan, legislation was introduced in the General Assembly which resulted in the passage of House Bill 388 during 1964. This Bill allocated $503,750 for the acquisition of land and water for local park, recreation, and conservation uses. The Bill also provided $1,998,750 for State Parks and $747,500 for Game and Fish acquisition purposes. Related legislation also provides for safeguards in land selection and channels for approval, including approval by the State Planning Office.

A progressive step in recreation planning was taken in 1965 with the passage of the Federal Land and Water Conservation Act under which Delaware has received funds annually to plan for, acquire, and develop recreation areas. Under this program, the Director of the Delaware State Planning Office serves as the liaison between the State and the Bureau of Outdoor Recreation, Department of the Interior. This program requires that a Comprehensive Outdoor Recreation Plan be prepared to serve as a basis for funding acquisition and development projects. Delaware's initial Outdoor Recreation Plan was prepared as part of the first Comprehensive State Development Planning Project. This initial plan was approved by the Bureau of Outdoor Recreation for a twenty-four month period, which expired in September, 1968.

In May, 1967, the Delaware State Planning Office prepared the "Procedural Guide: State Financial Assistance for Local Open Space Acquisition," a publication designed to stimulate interest in the land acquisition program for which funds were provided under House Bill 388. This report also simplified the formal application procedure.

The "Preliminary Comprehensive Development Plan" for the State of Delaware, prepared by the State Planning Office in June, 1967, contains a section on the Open Space Plan proposed by the Delaware State Planning Office to guide the development of open spaces and to give direction to urbanization. An open space system is described based upon the preservation of stream valleys. Resource areas are included in the system as well as certain farm areas. Also in June, 1967, an Outdoor Recreation Planning project was approved by the Bureau of Outdoor Recreation for the State Planning Office. It is anticipated that this project, which is culminated in this Outdoor Recreation Plan, will certify Delaware for recreation funds until 1975.

The State Planning Office published an "Outdoor Recreation for Delaware Inventory" in August, 1968. This report was designed as an inventory of the areas and facilities, both public and private, presently available in Delaware. Park and boat ramp user surveys were included to indicate the trend in public opinions as to needed programs.

Further developments in recreation planning include a thirteen year plan for State Parks prepared by the State Parks Commission. This program, known as "Project 80," is intended to provide a State Parks program that will accelerate efforts to provide recreational areas and preserve open spaces. Project 80 provides for land acquisition and development so as to fully utilize the acquisitions and maintenance funds. Another recent action is the passage of the Recreation Assistance Fund bill, discussed later in the plan, which provides recreation programming assistance to local governments and organizations.

As of July 1, 1969, the Bureau of Outdoor Recreation had approved 39 acquisition or development projects for the State. The areas, amount of grants, and approval dates are shown in Table 1.

Additionally, recreation planning has been undertaken by New Castle County, the culmination of which was the recreation portion of the New Castle County Comprehensive Plan, presented in August, 1966. Further planning efforts have been made in local planning programs, most notably those communities faced with critical urban pressures and dynamic growth. In the final analysis, however, the State has taken the initiative in outdoor recreation planning as well as in acquisition and financial assistance to localities for establishing recreation planning and action programs.

TABLE 1

LAND AND WATER CONSERVATION FUND PROJECTS

Sponsoring Agency	Acres	Title	Approval Date	Price /Acre	Amount of Federal Grant
01-P	433.0	Brandywine Creek State Park	12/1/66	$3,464	$ 750,000.00
02-F	137.6	McGinnes Pond and Access Acq.	12/20/66	728	50,250.00
03-P	550.7	Killens Pond State Park	7/22/67	915	251,515.00
4-F	15.8	Abbotts Pond and Access Acq.	4/3/67	516	4,125.00
6-F	8.0	Ingrams Pond Acq. (Mumford Tract)	4/20/67	1,000	4,000.00
7-F	1,220.0	Milford Neck Acq.	4/22/67	247	115,450.00
8-F	6.0	Andrews Lake Access Acq.	4/20/67	3,521	10,562.50
9-F	18.0	Portsville Access Acq.	4/3/67	278	2,500.00
10-F	225.9	Woodland Beach (Hampson)	4/3/67	97	11,000.00
11-F	2.3	Woodland Beach (James)	4/3/67	6,739	7,750.00
12-F	3.3	Tussock Pond Access Acq.	5/23/67	300	495.00
13-F	389.1	Little Creek (Haas)	5/25/67	170	33,000.00
14-F	464.0	Blackiston Area (Pratt) Acq.	6/1/67	237	55,000.00
15-F	267.1	Little Creek (Fair Haven) Acq.	6/1/67	195	26,000.00
16-F	959.0	Blackiston (Cassidy, Hargreaves and Smith)	6/2/67	211	101,250.00
17-F	44.0	Little Creek (Port Mahon)	5/23/67	86	1,895.50
19-N		Delcastle Recreation Area	12/29/67		200,000.00
20-F	212.5	Petersburg-Wright Acq.	12/19/67	167	17,750.00
21-P	24.3	White Clay Creek State Park (Smith Property)	1/19/68		41,000.00
23-MH		Development of Outdoor Recreation Hospital for the Mentally Retarded	5/22/68		5,950.00
24-MH		Development for Outdoor Recreation Delaware State Hospital	5/16/68		11,179.00
25-F	41.1	Petersburg-Rash Acq.	7/25/68	200	4,116.70
26-F	379.0	Petersburg-Chipman-Minner Tract	8/15/68	150	28,425.00
27-P	12.4	White Clay Creek State Park (Mabel I. Thompson Property)	1/19/69	4,032	25,000.00
28-F	555.0	Augustine Beach-Silver Run Tract	2/12/69	378	105,000.00
29-F	12.6	Duck Creek Impoundment Access Area	1/10/69	1,083	6,825.00
30-P	17.8	White Clay Creek State Park (Ragan Property)	1/29/69	3,097	27,562.00
31-F	154.0	Milford Neck Area (Jester Property)	2/5/69	146	11,250.00
32-P	72.3	White Clay Creek State Park (Walter J. Wells Property)	3/27/69	6,224	225,000.00
33-P	78.3	Lums Pond State Park (Norman C. Allcorn Property)		1,328	52,002.20
34-F	73.0	Waples Pond Acq.	5/8/69	274	10,000.00
35-F	1.0	Abbotts Pond Access Site (Watson Tract)	4/29/69	1,000	500.00
36-F	7.7	Haven Lake Access Site (Evans Tract)	5/8/69	2,597	10,000.00
37-F	750.0	Nanticoke Area Acq. (Henry Tract)	7/1/69	133	50,000.00
40-P	95.0	White Clay Creek (Vannoy Prop.)	1/13/70	4,316	205,000.00
41-P	53.9	White Clay Creek (Maxwell Prop.)	1/13/70		138,150.00
42-P	150.0	Lums Pond (Ford and Cann Prop.)	1/13/70	1,800	135,000.00
43-F	143.0	Petersburg (Liebel Tract)	7/1/69	175	12,500.00
44-F	737.0	Nanticoke (Hastings Prop.)	4/10/70	257	94,850.00
				Total	$2,849,000.70

Agency Code: P - Division of Parks Recreation and Forestry
F - Fish and Wildlife
N - New Castle County
MH - Division of Mental Health

RESPONSIBILITIES FOR OUTDOOR RECREATION PLANNING

In the final analysis the responsibility for outdoor recreation planning, like all other governmental functions, must be vested in the people as their hopes, their needs, their preferences, and their money must be manifested through the machinery of government before the effort may begin. Once these basic inputs are made, however, the responsibility for assuring that adequate amounts of open space and facilities are available to meet the present and long range needs lies primarily with the state, local, and federal governments.

Traditionally, various levels of government have exercised their respective powers in the interest of the public welfare on the basis that this action is justified by a contribution to the individual's social, physical, educational, and cultural well-being. Increasingly, however, this role is being expanded in recognition of the future need, not only for man's existence but also for his pleasure. Fortunately, the provision of the facilities which add pleasure to life can generally be combined with those which protect such natural resources as forests, water courses, wildlife, and essential minerals.

Outdoor recreation becomes primarily a responsibility of government in order that recreation needs may be met in a manner complementary to the protection of natural resources and with an eye to the future needs.

These responsibilities must be delegated among the levels of government in order that maximum efficiency in meeting the need may occur. The demands on each level and the ability to meet the total range of demands is significantly different at each level.

The State of Delaware

The Delaware Code provides for the delegation of legal responsibilities under a general category of Conservation (Title 7, Delaware Code annotated, 1953, as amended). The powers and duties formulated under this title include: the protection, conservation, and propagation of fish and wildlife; the control and direction of the shellfish industry and the protection of shellfish; and protection and administration of forests and woodlands.

Title 7 also provides for: agricultural conservation; establishment of soil conservation districts and programs; drainage of land and creation of tax ditches; and the possession, use, and disposal of public lands. This title further includes the creation of state parks; the expenditure of funds for acquisition, development, and maintenance of lands suitable for recreation; and the making of plans, regulations, and agreements for the administration of recreational facilities. Finally, Title 7 contains provisions for the establishment and maintenance of certain memorials, the protection of archaeological sites, and the study and administration of the State's geological resources.

Another Title, Number 29, provides for a Public Archives Commission (Chapter 33) charged with responsibilities for the preservation and recording of historic documents, marking of historic points of interest, and the selection, acquisition, repair, restoration, and administration of historic buildings, sites, or objects worthy of such preservation. This title also provides for maintenance of a State Museum under the Public Archives Commission.

Additional legislation has provided appropriations for acquisition of lands for park, recreational, and conservation purposes (7, Section 5801) encouraged the creation on private land of public recreational facilities (7, Section 5901), and has designated the State Planning Office to review all outdoor recreation land acquisitions for the State of Delaware for compliance with the Delaware Comprehensive Plan.

This legislation, while establishing duties and powers in a broad sense, has not delineated the characteristics of the responsibilities as related to those at other levels. Therefore, the following state-oriented characteristics should be identified.

First, the State's outdoor recreation system is largely resource based. The primary role of State facilities should be to provide outdoor recreation experiences for Delaware citizens and visitors in a nature-centered setting. These facilities should provide a variety of recreational facilities and accommodations for recreational pursuits and enjoyment of scenic and historic areas.

Second, because of the resource orientation, the facilities of the State should be relatively large in size, but much less intensely developed than those at a more local level. The State should honor its official charge of preserving and protecting the recreational and environmental resources rather than attempting to provide highly developed facilities which too often provide no relief from the urban frame of reference of most of their users. Nevertheless, these areas and the uses therein may be as actively-oriented as local facilities but with different facilities and a greater emphasis on the natural setting.

Third, State parks and outdoor recreation facilities should resolve problems related to resource preservation and use which supercede local jurisdictional boundaries. Hence, the State has the partial, if not total, responsibility for resources which are split by natural features, such as a water area or ridge line, and which are also local jurisdictional boundaries. This responsibility should--at least--be for coordination of efforts, at the local level, if not for actual acquisition and development.

Therefore, the State has the responsibility of providing large scale facilities which are neither of a national concern or a local concern. Such State facilities, designed for meeting the needs of a significant portion of the State's population, should provide multi-use recreational areas for resource-oriented outdoor recreation activities, and should protect and encourage the enjoyment of unique "scenic, historic, scientific, prehistoric, and wildlife resources of the State."

Federal Government

A primary responsibility of the federal government is the maintenance of outdoor recreational facilities and other open spaces which includes areas of national interest due to their size, exceptional natural or historical character, or multi-jurisdictional value. Most of these are not located with respect to potential users but rather are strictly resource location oriented.

The federal government's role is essentially that of land manager. Most of its agencies are involved in the protection of forests, creation of refuges for migratory waterfowl, administration of national monument areas, and protection of nationally or regionally significant river basins and watersheds. In all of these, the need is such that it could not adequately be met by the separate and combined actions of smaller jurisdictions.

Another role of the Federal government is broad based research of an environmental nature. The results of such research has regional or national significance but also affects State and local actions. An example of such a study is the North Atlantic Regional Study being conducted by the Water Resources Council. The objectives of the North Atlantic Study are to develop and document the information which decision-makers need to guide the ordinary and proper development of the region's water and related land resources.

Counties and Municipalities

The actions of higher levels of government in meeting the outdoor recreation need do not relieve the local jurisdiction of its responsibility to provide adequate, close-by facilities for its citizens. These facilities are the most detailed part of a comprehensive outdoor recreation system and are perhaps the most basic. Services such as playgrounds, playfields, and swimming pools and the small urban parks are essentially a local responsibility. These services often must involve organization and administration of recreational programs as well as merely providing the facilities.

Services at this level of responsibility are user-oriented and must be related to the special needs of relatively small units of people. They cannot be adequately provided by state or federal governments which are not directly responsive at such a small scale.

In summary, the local levels of government should provide for the basic recreation needs of their citizens. They should concentrate on a balanced system of facilities which are readily available to all citizens near their homes. They should provide the active outdoor recreation space and facilities no longer available to the urban dweller in his high density, congested, intensively utilized environment.

The Public and Private Enterprise

As noted, the ultimate responsibility returns to the public. Their responsibility as citizens requires that they make their desires known to their elected officials, that they support plans and programs to meet the outdoor recreation need, and that they preserve and protect the limited outdoor recreational resources.

Their other responsibility involves the private enterprise function. Business can help meet the total outdoor recreational need in a variety of ways, ranging from the operation of subsidiary services in facilities provided by a governmental body to provision of certain facilities themselves. All of these, however require a commitment on the part of private enterprise to exercise judgement so as not to defeat the public interest in pursuit of profit.

Private investment should be encouraged with the requirement that such outdoor recreation development be in accordance with acceptable standards, make reasonable use of natural resources, and be open to all citizens on an equal basis. Through properly designed and responsibly operated recreation businesses, the public can receive the widest range of recreational opportunities, the local and state economies can be significantly strengthened, and the operator can realize both a profit and a sense of satisfaction in meeting a public need.

GOALS AND OBJECTIVES OF THE OUTDOOR RECREATION PLAN

The goals and objectives of this Outdoor Recreation Plan for Delaware are consistent with the national objectives established by the Land and Water Conservation Fund Act of 1965 under which this was prepared. These broad goals include: increasing the nation's outdoor recreation resources; preserving existing public outdoor recreation resources from encroachment of incompatible uses; protecting, enhancing, and restoring the natural beauty and other qualitative aspects of the total outdoor environment; and serving the outdoor recreation needs of the increasing number of urban and metropolitan residents.

In accord with these broad guidelines and the needs of Delaware's residents and visitors, this plan is dedicated to the goal of developing a comprehensive, orderly, efficient, and achievable process for outdoor recreation planning, programming, and action for the residents and visitors of the State of Delaware. Specific objectives of this plan are to:

1. Provide opportunities for physical and mental revitalization through the development of a diversified system of outdoor recreation facilities.

This objective encompasses the policy of providing facilities for the satisfaction of active and passive recreational needs of all residents and visitors of the State. It also provides for a balanced, coordinated system of open spaces and active use areas to serve both the busy urban centers and the State's rural and suburban areas. Finally, it includes the creation of green space systems to enhance the value of nearby development, to connect the active elements of the plan, and to protect the natural scenic beauty.

2. Prepare programs and plans for the preservation of irreplaceable natural resources.

This objective proposes the delineation of scenic vistas, valuable wetlands, significant stream valleys, the State's bay and ocean shoreline, and other natural resources worthy of special consideration in their own right, and the formulation of programs and techniques for their preservation.

3. Develop programs and policies for the coordination of acquisition and development efforts of all State agencies with those of other public and semi-public bodies engaged in providing facilities for outdoor recreation, in fish and wildlife conservation, or in the preservation of scenic, cultural, or historic resources.

Inherent in this objective is the need for coordination of efforts and funds in order that the maximum benefit may accrue from the expenditure of public and private funds. It also implies the full utilization of all applicable funding sources to which Delaware may be entitled in order that the direct public burden may be minimized. Further, it suggests the need for studying the role of each agency and its relationship to other agencies engaged in related activities.

4. Determine an appropriate level of State action vis-a-vis the role of private enterprise in the provision of outdoor recreation facilities.

Strengthening the private economy is a primary objective of all governmental programs. This statement recognizes that the State should limit its action to the provision of facilities and services which it is best suited to provide as well as establish the role and the degree to which private enterprise should be encouraged to help meet outdoor recreation needs.

5. Establish responsibility, evaluate potentials and constraints, delineate special problems, propose programs and actions, and establish priorities for provision of outdoor recreation facilities.

This objective embraces many concepts in what is essentially an abridged outline of the work that follows. It includes the necessity of reviewing legal requirements of the various agencies, evaluating their actual roles, and considering administrative and organizational structures in regard to outdoor recreation. It also includes determining and proposing solutions to special problems such as the recreation needs of the handicapped and underprivileged, and the continuing loss of wetlands and urban open spaces. Furthermore, it includes the objective of providing reviews and recommendations concerning the value of legal and other tools for land development control, for preservation of natural resources, and for protection of fish and wildlife. Finally, it proposes the determination of priorities in order that the most critical needs can be met within the constraints imposed by financial factors, staff capabilities, and other pressures on limited land and water resources.

These objectives outline a work program aimed at the creation of an outdoor recreation system to serve as a guideline for State, county, local, and federal government; private enterprise; and the activities of civic, service, and conservation groups throughout the State. The outdoor recreation need, the limited natural resources, and the press of urbanization demand that this effort be made and that its results be implemented.

BACKGROUND

DELAWARE'S OUTDOOR RECREATION POTENTIAL

Delaware, second smallest of the 50 states, and part of a virtually level coastal plain, possesses an outstanding array of outdoor recreation potential, and is subject to an equally outstanding threat by virtue of its configuration and its metrpolitan location.

Delaware is located in the southern part of the north Atlantic metropolitan complex known as megalopolis. It is bounded on the east by the Delaware River, Delaware Bay, and the Atlantic Ocean; on the south and west by Maryland; and on the north by Pennsylvania. (See Figure 1). The State has three counties with a total area of 2,057 square miles, including 79 square miles of inland water. It is 96 miles in length and varies in breadth from nine miles in northern Delaware to 35 miles in southern Delaware.

Within a day's driving time reside over 8,426,000[2] persons in the highly urbanized centers of Washington, D.C., Baltimore, Philadelphia and New York. Its peninsula location also makes it a dead-end for travel to and participation in outdoor recreation activities - a location which places large demands on its resources. These resources are influenced by the State's topography, geology and soils, streams and other water areas, climate and woodlands.

NATURAL FEATURES

Topography

The highest point in Delaware is 442 feet above sea level. It is located in the Piedmont Plateau, northwest of Wilmington near the Delaware-Pennsylvania State Line.

The Fall Line is the division between the Piedmont Plateau and the Coastal Plain. The moderate-to-steep slopes and narrow stream valleys of the Piedmont end along this line. The Fall Line crosses the northern part of the State from northeast to southwest, cutting through Wilmington and Newark. Six percent of the land area of Delaware is located north of this line, that is, in the Piedmont. The remainder of the State is located in the relatively level Coastal Plain.

The low elevation and flat topography of the Coastal Plain limit the effectiveness of natural drainage. Floods occur because entire watersheds receive direct precipitation at the same time.

Geology

As indicated above, Delaware is located in two geological subdivisions: the Appalachian Piedmont Province and the Atlantic Coastal Plain Province. The Piedmont extends along the eastern flank of the Appalachian Mountains from New Jersey to Alabama. The Atlantic Coastal Plain of Delaware is a small emergent portion of a great mass of sedimentary rock known as the Atlantic Continental Shelf, which stretches from Newfoundland to Florida.

The rocks of the Piedmont are very old, hard, and crystalline. Those of the Coastal Plain are younger, largely unconsolidated sediments. A seaward extension of the ancient Piedmont rocks forms a platform upon which the thick wedge of the Coastal Plain sediment is constructed. The layers or beds of rock in the Coastal Plain are arranged like the shingles of a roof, overlapping seaward so that the older units are exposed near the Piedmont and are buried under successively younger rocks to the southeast. A layer of ice-age sand and gravel forms an almost complete cover over this entire structure.

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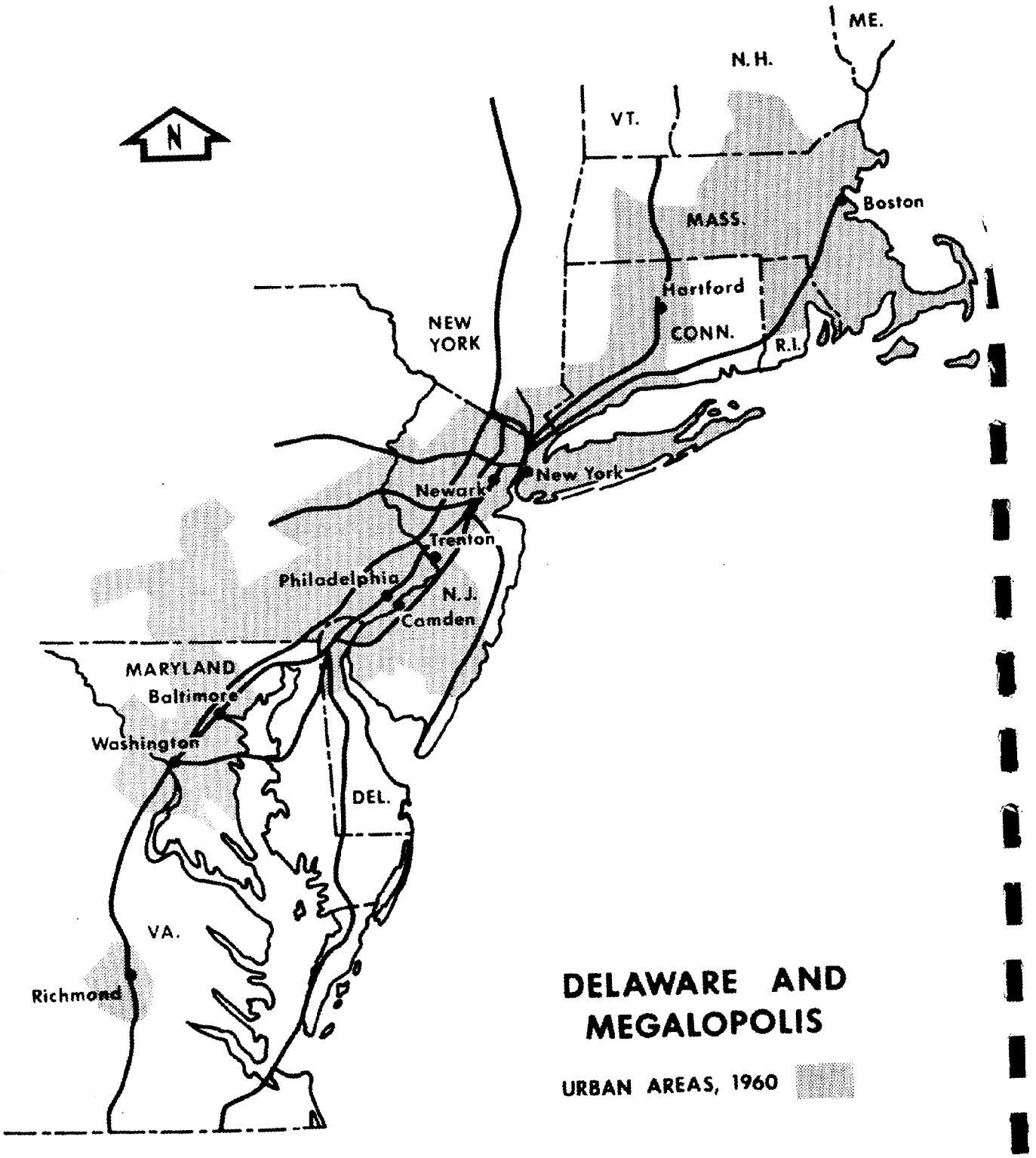
[2] 1960 U.S. Census of Population

FIGURE 1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DEL.
VA.
Richmond
DELAWARE AND MEGALOPOLIS
URBAN AREAS, 1960

Soils

The soil classifications shown in Figure 2 generally reflect their suitability for urban development. This suitability is a matter of drainage. The flatness of the coastal flood plains impairs runoff in those soils with poor surface drainage. The soils with poor subsurface drainage prohibit development where private on-site utilities are necessary.

Alluvial meadows, swamps and tidal marshes are shown in Figure 2 under the general category of Marsh. These areas have little urban development potential without extensive filling, an action generally detrimental to the objectives of this plan.

The soil classification for urban use additionally has a recreation resource value. By this delineation two facts emerge: one, further development will largely be limited to the areas with good drainage, hence, user-oriented recreation needs will tend to congregate here; and second, many of the non-useable or marginal use lands (urban use) will be available for outdoor recreation use where such use will be compatible with the natural geological characteristics.

Streams

As shown in Figure 3, Delaware has many small streams. There are numerous fresh water ponds and three shallow bays. Drainage basins with headwaters lying out of the State are the present and principal future sources of surface water in northern Delaware. Drainage basins with flows mainly originating within the State and drainage basins that are contained entirely within the State are of minor importance at the present time as a water supply source. Ground water supplies the southern two Delaware counties.

The Delaware River, which receives practically all the surface and subsurface water drainage of northern Delaware, is saline along the entire eastern boundary of the State.

The streams entering the Delaware River estuary are subject to cyclic tidal fluctuations. During high tides saline water moves inland, contaminating shallow water acquifers in the coastal areas.

The rivers, streams, ponds, and bays, while not useable for water supplies, present an excellent opportunity for development of water-based recreational facilities.

Climate

The climate of Delaware is moderate due to the proximity of the large bodies of water surrounding the Delmarva Peninsula. At Dover, the State Capital, the annual average January temperature is about 36 degrees while the average July temperature is about 77 degrees with a recorded maximum of 104 degrees and a minimum of eleven degrees below zero. The annual rainfall at Dover is approximately 45 inches and the growing season averages about 188 days.

Forests

Much of Delaware is covered by forests. The locations and extent of these woodlands are shown in Figure 4. Oak-hickory is the predominant forest type in Kent and New Castle Counties. Loblolly or southern yellow pine is the predominant forest type in Sussex County. The forests are an important natural resource serving as a means of recharging the ground water supply and, in Sussex County, the basis of a significant wood products industry.

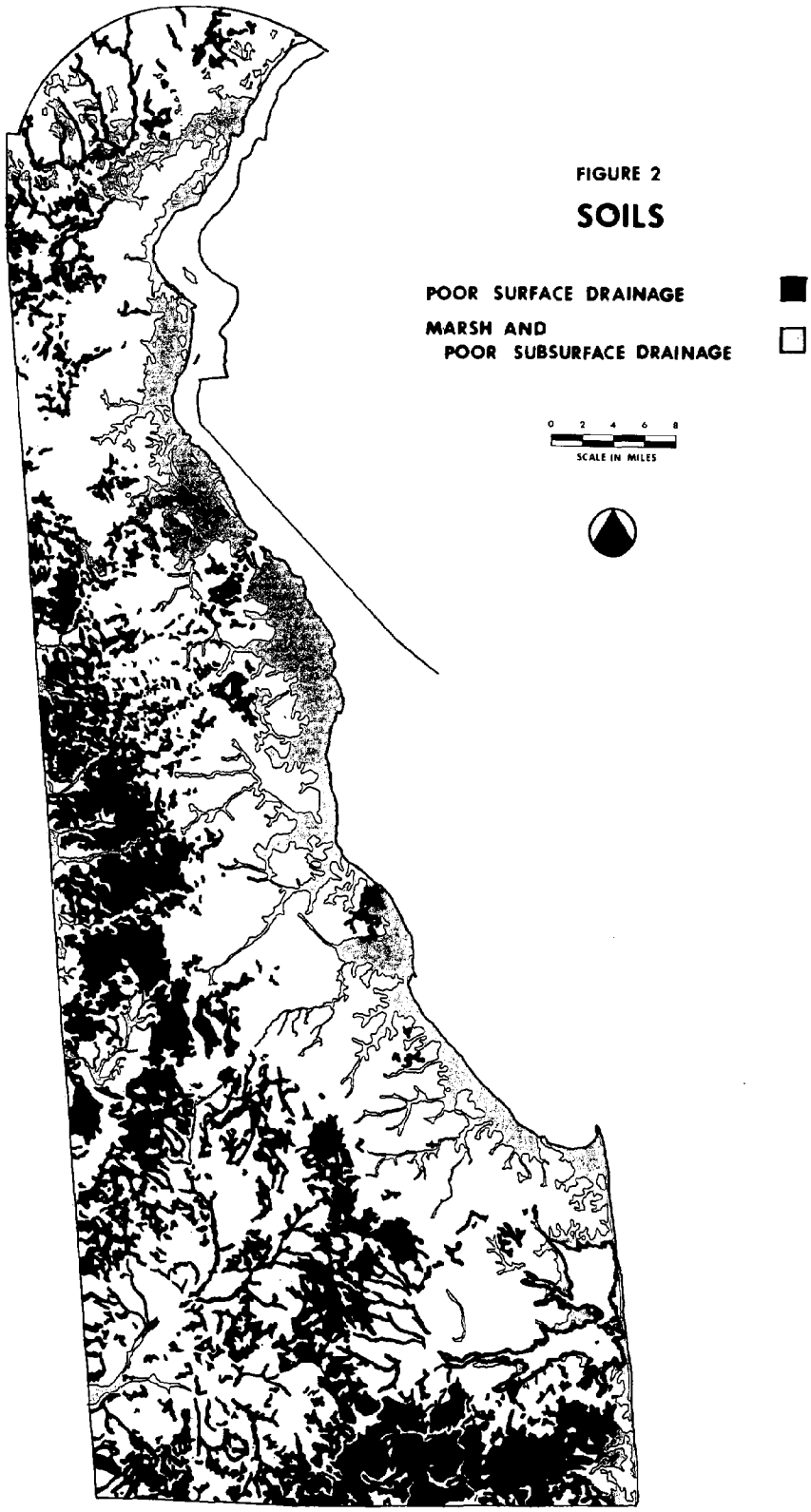


FIGURE 2

SOILS

POOR SURFACE DRAINAGE

MARSH AND
POOR SUBSURFACE DRAINAGE

0 2 4 6 8
SCALE IN MILES

FIGURE 3

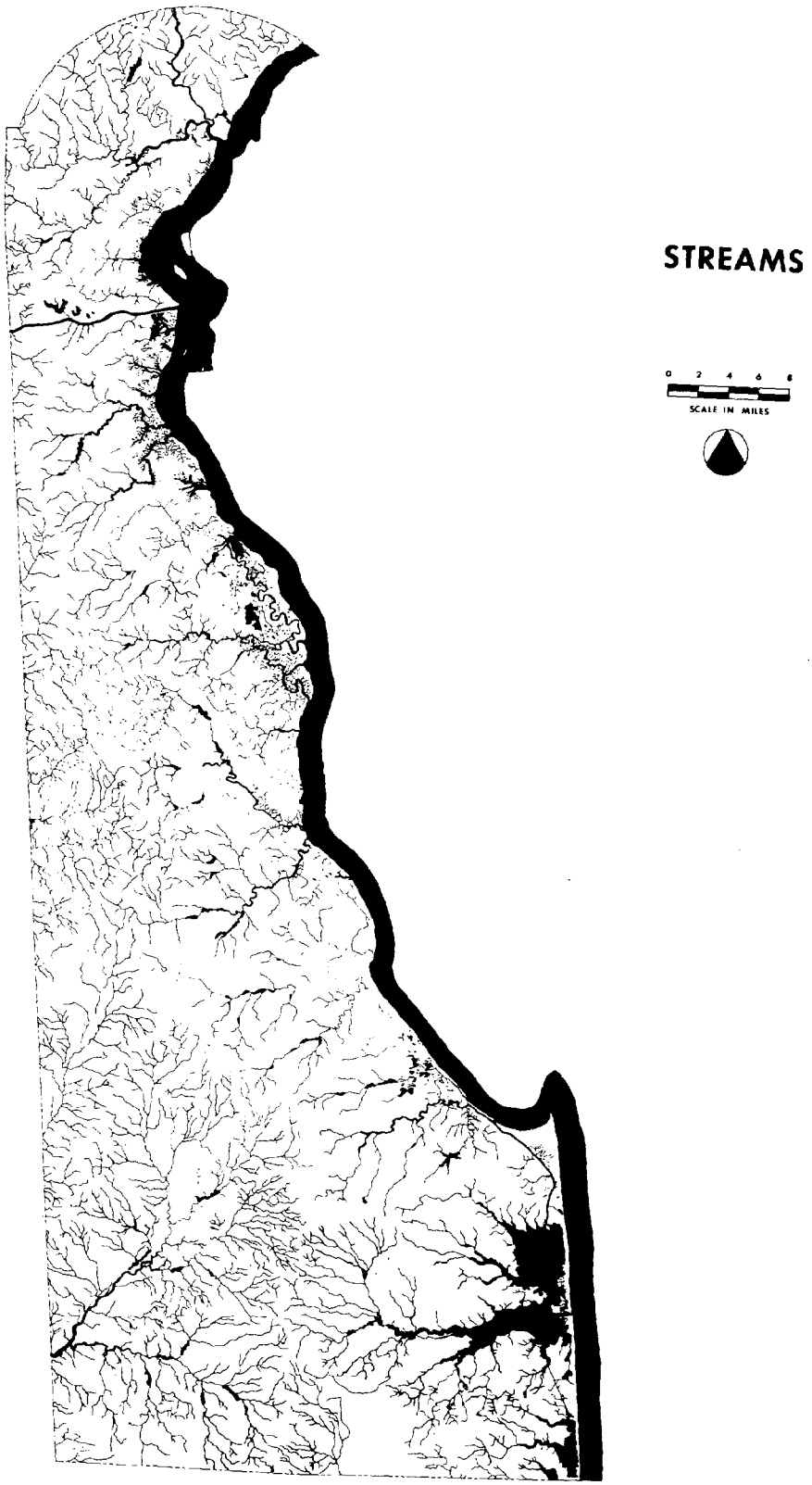


FIGURE 4

FORESTS

0 2 4 6 8

SCALE IN MILES

Additionally, these woodland resources have recreational value for hunting, camping, picnicking, and numerous passive uses. Furthermore, they are important to the ecology of the State. Many of the woodlands also have special significance due to their concentration, type of tree, or virgin character.

ECONOMY AND GROWTH

Delaware was the Nation's fifth fastest growing state with a 40.3 percent increase in population in the decade from 1950 to 1960. More than 68 percent of the State's population is located in New Castle County.

The Wilmington area is one of the chief chemical manufacturing centers of the world. The manufacture of transportation equipment has also become an important industry in northern New Castle County. Agriculture is still an important industry in Delaware with nearly forty percent of the State's supporting crops, concentrated in Sussex County, are by far the leading farm enterprises.

In the decade from 1950 to 1960, Delaware had a population growth of a magnitude that was unprecedented in the history of the State. Population forecasts indicate that during the current and the 1970 to 1980 decades Delaware's population increase will be much greater than the population growth that occurred between 1950 and 1960.

This increase in population, coupled with rising personal income and increased leisure time, will result in additional demand from outdoor recreation activities. Providing the necessary facilities and programs to meet this large outdoor recreation demand is the overall goal of this plan.

Early History of Delaware

Due to its prominent position in early American history, Delaware has many areas of cultural and historical significance.

The Delaware coastline was explored in the sixteenth century by the Spanish and Portuguese, but little is known of their early ventures. On August 28, 1609, Henry Hudson entered the Delaware Bay.

The State was named by Captain Samuel Argall who visited the area in 1610 and named it after his patron Lord De LaWarr, an early governor of the colony of Virginia.

Dutch traders who arrived in 1622 to trade with the Indians were the first settlers to live in the area. A trading company under the leadership of Captain David Pieterssen de Vries established the settlement of Zwaanendael near present day Lewes in 1631. Within a year of their arrival, the colonists were massacred by the Indians. Little trace of the settlement was found when ships returned to the area in 1632.

The first permanent settlement in the State was made in 1638 when a group of Swedes and Finns under the leadership of Peter Minuit settled on the Christina River on the site of present day Wilmington. The Swedish settlements eventually extended from Cape Henlopen into Pennsylvania.

In 1651, the Dutch under Governor Peter Stuyvesant built Fort Casimir, which was located near what is now the City of New Castle. Four years later Stuyvesant captured the Swedish forts and Fort Casimir, which had been seized by the Swedes, thus establishing Dutch control of Delaware and ending the Swedish colonial enterprise.

As Fort Casimir was not large enough to accommodate all the settlers, the town of New Amstel was founded. The colony made great progress which included a vigorous fur trade with the Indians and the re-establishment of a trading post near the ill-fated Zwaanendael settlement. Agriculture was encouraged, along with the digging of canals and diking of marshes.

The government was the dictatorial military governship of the period, exercising instructions from the crown. Education was fostered by the clergy, who represented their own state church, but were very tolerant of the Swedish Lutherans.

In 1664, as a result of the wars between England and the Netherlands, a British expedition led by the Duke of York was sent against the Dutch colonies. A force under Sir Robert Carr defeated the Dutch. The English renamed New Amstel, New Castle, and the river and bay were named Delaware.

Although the Dutch were allowed to retain their lands, the Duke of York's laws and the English legal system were introduced in the colony. In 1680, New Castle and Deale Counties were divided to create St. Jones County.

Upon the request of William Penn, Charles II made Delaware a part of the Province of Pennsylvania. On October 27, 1682, Penn landed at New Castle and held the first general assembly in the colony. St. Jones County was renamed Kent County, and Deale was renamed Sussex County.

The Delaware colonists generally opposed taxation by the British Parliament. With the beginning of the Revolution, nearly 4,000 men from Delaware enlisted for service. In 1775, look-outs were stationed at Lewes to watch for British ships entering the Bay. Only one skirmish was fought on Delaware soil, at Cooch's Bridge, where the American flag was first believed to be displayed in land battle.

The present boundaries of Delaware were not proclaimed until 1775. The next year, Delaware declared itself free from the British Empire and established a state government entirely separate from Pennsylvania. Delaware became the "First State" by virtue of being the first state to adopt the Constitution on December 7, 1787.

One of the greatest aids to this State's recovery from the Revolution was the invention of automative flour milling machinery in 1785 by Oliver Evans of Newport, Delaware. During that same year, the mills along the Brandywine Creek in Wilmington alone shipped 300,000 bushels of flour. Further growth of the State was evident in the establishment of the duPont Power Mills on the Brandywine in 1802, and the chartering of the Farmers Bank in 1807.

On December 7, 1799, the Maryland General Assembly authorized the Chesapeake and Delaware Canal Company. After receiving Delaware's approval, the Canal Company was organized in Wilmington on May 2, 1803. Work was begun on the Canal the following year. The Canal opened for regular traffic in September, 1829, thus allowing inland shipping between Wilmington and the economic centers of the east coast.

Boundary disputes had continued between Delaware and New Jersey since the colonial period. The case was settled by the Honorable John Sergeant, a Federal arbitrator. On January 15, 1848, his decision established the present eastern boundary of the State.

INVENTORY

This section is designed to be an inventory of the present supply of outdoor recreation facilities and areas available in Delaware. The inventory provides an insight into the total recreation resource picture and forms the base from which total needs are computed by subtraction of the supply from the expected demand.

The inventory and surveys were conducted by personnel from the State Planning Office, the former State Parks Department, with the cooperation of the various State, federal, and local recreation and conservation agencies and with the cooperation of numerous private groups. The inventory material is presented in the following order: Federal; State; Local; and Private Recreational Facilities.

The inventory of the federally administered or maintained outdoor recreation areas has been acquired through site surveys and from the federal agencies involved as of July, 1969.

The information on State-owned or operated outdoor recreation areas is based upon the State Property Inventory, December, 1967, and an update to July 1, 1969, as maintained by the Delaware State Planning Office and verified by the agencies involved.

Each municipality was contacted to establish the amount of outdoor recreation area under its jurisdiction and the predominant use of the area. This data reflects these areas as of July, 1969, while the private facilities portion of the data reflects the December, 1967, inventory.

INVENTORY OF PUBLIC AREAS USED FOR OUTDOOR RECREATION UNDER FEDERAL CONTROL

The federal government has approximately 26,000 acres of Delaware land in this use (Figure 5). These lands are administered by either the Department of the Army, Corps of Engineers or the Department of the Interior, Bureau of Sport Fisheries and Wildlife, Fish and Wildlife Services.

U.S. DEPARTMENT OF THE INTERIOR

Kilcohook Wildlife Refuge

As a result of the dredging operation to maintain a navigable water channel in the Delaware River in 1934, a large mass (1,487 acres) known as Kilcohook Wildlife Refuge was formed on the New Jersey side of the River. Though this area is physically attached to New Jersey, a court ruling establishing the Delaware-New Jersey boundary rules Delaware's sovereignty extended to the low water mark of the eastern shore of the Delaware River. This makes any fill area along this boundary part of Delaware. While the refuge is of no value to Delaware residents as a recreation area due to its location on the opposite side of the River, it does make available breeding grounds for water fowl and small animals.

Bombay Hook National Wildlife Refuge

The Bombay Hook Refuge, established in 1937, is one of several stopping places located at strategic points along the Atlantic Flyway from Canada to the Gulf of Mexico. It is situated approximately eight miles northeast of Dover.

The Refuge is comprised of 16,280 acres, of which about 10,500 acres are tidal marshland. The rest of the area includes 1,200 acres of impounded fresh water pools, brush and timbered swamps, 1,000 acres of crop lands, and timbered grassy upland.

The recreational uses of the areas include nature study, photography, sightseeing, dog field trials (two in the fall and one in the spring), and hunting on a limited basis, (3,000 acres on which 12 blinds are erected and open for use three days per week for geese and archery type deer hunting). Observation towers, nature trails, restrooms, picnic tables, and an information booth are provided.

According to agency officials, there were 22,014 visitors to the Refuge during calendar year 1967. The bulk of the visitors (17,850) were recorded as general use while 4,164 were recorded as hunters. A net loss of visitors over the past few years is partially attributed to the entrance fee now being enforced at federal areas.

Primehook Wildlife Refuge

Primehook Wildlife Refuge, established in 1963 under a plan coordinated with local agencies and interests, continues toward a proposed 10,000 acres to be completed in the next ten years. (Presently 63% completed). Primehook Refuge will include a conservation education building, nature study facilities and development to allow hiking, fishing, boat launching, picnicking, hunting and dog field trials.

U.S. ARMY CORPS OF ENGINEERS

Chesapeake and Delaware Canal

The Corps of Engineers is indirectly involved in outdoor recreation by virtue of having the responsibility of maintaining waterway navigation channels such as the Chesapeake and Delaware Canal. To accomplish this responsibility, it has been necessary to acquire additional land to be used for the deposition of spoils on either side of the channel. Approximately 5,000 acres of land have been acquired for this use.

The hydraulic fill of these areas presents a hazard for a time after the operation is completed. Subsoil conditions do not permit rapid leaching of liquids, allowing a hard crust to form over the top which will not usually support a person's weight. Therefore, these fill areas are excluded from public use until test borings indicate that conditions are safe.

In spite of the limitations and restrictions, the lands adjacent to the canal were visited by some 32,000 people during 1967. Boating and fishing appear to be the most popular uses of the canal, while the land provides hiking, picnicking, photography and sightseeing. As areas are designated safe for public use, the Corps of Engineers licenses these areas to the Department of Natural Resources and Environmental Control for the hunting of small game and for various recreational uses. Such areas are open to the public with the same seasonal controls of any public hunting ground. These activities in the winter months coupled with the summer activities provide year round outdoor recreation facilities.

The Corps of Engineers is also responsible for establishing and maintaining the depths of certain canals and channels comprising of, or accessory to, the Delaware segment of the "Inland Waterway" and other heavily used or necessary inlets, bays and river courses. The areas listed below are an integral segment of Delaware's outdoor recreation endeavor, as they allow for maximum recreational boating opportunities.

Christina River Project (Wilmington Harbor)

The Christina River project consists of nearly ten miles of channel in the River from the Delaware River to Newport. The channel starts at a thirty-five foot depth and a four hundred foot width at the Delaware River and gradually decreases to one hundred feet in width and a seven foot depth at Newport. (The width and depth is based upon the use and traffic.) At the lower end where the Wilmington Harbor is serviced is the wider and deeper channel. Once past the old pulp works (approximately the four mile mark) the channel decreases to one hundred feet by seven feet. From this point upstream to Newport water oriented recreation uses predominate.

St. Jones River

This seven foot channel from Delaware Bay to the landing at Dover was completed in 1933. The stream provides crabbing, fishing, and passage for only small boats.

Waterway from Indian River Inlet to Rehoboth Bay

Because this water level is below one foot at low tide in both Indian River Bay and Rehoboth Bay, a channel six feet deep and 100 feet wide is provided for passage of pleasure boats. The channel is 2.7 miles long.

Beach Erosion Control Projects

Restoration and subsequent periodic nourishment of the beach lands have been instituted to prevent further erosion.

This span of narrow beach, located between the Atlantic Ocean and Rehoboth Bay, provides a needed recreation area for summer activities such as swimming, sunbathing and hiking. The area is easily accessible by a highway running through the center of the peninsula.

Pepper Creek, Delaware

This six foot deep channel is a 3.9 mile branch of the Indian River Channel reaching into Pepper Creek to Cattail Marsh. The project was completed in 1964.

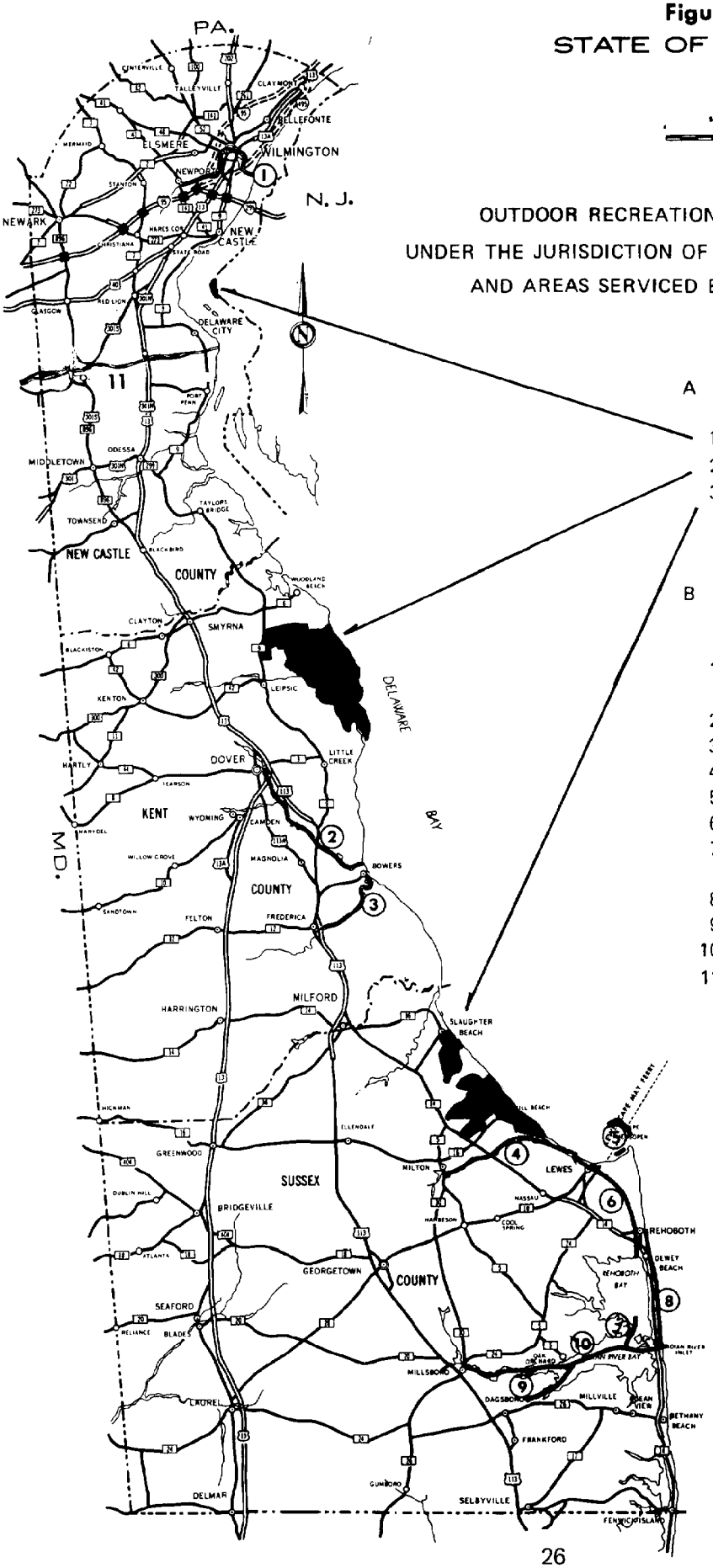
Indian River Inlet

This channel from Indian River to Millsboro, Delaware, provides a 13 mile water passage ranging in depth from 15 feet at the entrance to Indian River to four feet deep and 60 feet wide at Millsboro. A turning basin nine feet deep, 175 feet wide, and 300 feet long is located at the shallow end of the channel.

Fishing and boating are the most popular recreational activities.

Figure 5

STATE OF DELAWARE



SCALE IN MILES

OUTDOOR RECREATION AREAS IN DELAWARE
UNDER THE JURISDICTION OF THE FEDERAL GOVERNMENT
AND AREAS SERVICED BY FEDERAL AGENCIES

A FEDERAL LANDS –

1. Kilcohook Wildlife Refuge
2. Bombay Hook Wildlife Refuge
3. Prime Hook Wildlife Refuge

B AREAS SERVED BY U.S. CORPS OF ENGINEERS ~ (9)

1. Christiana River Project (Wilmington Harbor)
2. St. Jones River Project
3. Murderkill River Project
4. Broadkill River Project
5. Harbor of Refuge, Lewes, Delaware
6. Inland Waterway - Rehoboth to Lewes
7. Waterway - Indian River Inlet to Rehoboth Bay
8. Beach Erosion Control Project
9. Pepper Creek Project
10. Indian River Inlet and Bay Project
11. Chesapeake and Delaware Canal

Broadkill River Project

The project was initiated in 1874 to provide a channel from the Delaware Bay to Milton along the course of the Broadkill River. The total length of the project is ten and one-half miles with channel dimensions' of forty feet in width and six feet in depth. More recently the entrance near Broadkill sound was abandoned and an entrance was made from the northern end of the Lewes and Rehoboth Canal, thus utilizing Roosevelt Inlet. Primary uses of the channel are fishing and recreational boating.

Harbor of Refuge, Delaware

The existing project, adopted in 1930 provides a breakwater 8,000 feet long. The breakwater affords protection for pleasure boats from the rough seas and for the Cape May-Lewes Ferry during its docking operations.

Rehoboth-Lewes Canal

The existing project, adopted in 1912 and modified in 1935 and 1945, provides for a channel at least six feet deep and 50 feet wide. The total length of the channel is 12 miles.

The facility allows for the safe passage of pleasure boats from Rehoboth Bay by avoiding the danger of open seas.

INVENTORY OF PUBLIC AREAS USED FOR OUTDOOR RECREATION UNDER STATE CONTROL

STATE-OWNED LAND

Approximately 36,728 acres of State-owned land and water areas are available for outdoor recreation and historical review. Five separate State agencies or divisions administer these lands.

Although some 36,728 acres of State-owned land and water are available for outdoor recreation, many of the areas have controlled uses imposed upon them by the administering agency. These restrictions are not intended to be deterrents to other types of recreation; however, each land holding agency has a specific public function and must dedicate the primary use of land to this function. In most cases as will be shown throughout the inventory report, other non-conflicting recreation uses are allowed and often fostered. To better illustrate this point, each of the landholding agencies listed is described as to its primary function, its land holdings and the permissible uses.

HISTORIC AND PREHISTORIC RESOURCES

The Division of Archives and Cultural Affairs of the Department of State is charged with the responsibility to preserve and maintain, for posterity, all matters of public record. Normally this mandate would not, to a great extent, affect outdoor recreation; however, the law establishing the former Archives Commission further states:

> "... To prevent the further loss of part of our National heritage and culture through the deterioration or neglect of historic buildings, sites or objects within this State, the Public Archives Commission may survey, examine, select for preservation, acquire, repair, restore, operate and make available for public visitation and use such historic buildings, sites or objects as it may deem worthy of preservation in the best public interest for the fulfillment of this subchapter ..."

This law still has significance for the action of the Division as regards the public utilization of significant historic and cultural areas.

Under this section of the law, the Division of Archives and Cultural Affairs enters the field of recreation. The Division administers 16 areas of national and/or statewide historical and prehistoric importance. As seen in Table 3, Areas Administered by the Division and its accompanying Figure 7, a few listed areas contain two items of historic importance. Also, there are two cases where the land is not owned by the Division; however, leases or other legal agreements have been established with the present owner (in each case another public body).

State Museum - Presbyterian Church

The official State Museum is located in Dover at the intersection of Governor's Avenue and Bank Lane. The complex consists of four major buildings housing various artifacts significant to the culture and development of Delaware. Two buildings were constructed and used by the Presbyterian Synod, a church built in 1790, and a more recent parish house adjacent to it. The other buildings on the site are the "Old City Gas Works" which now houses a Swedish-type

plank house and, the most recent structure containing the works of E. R. Johnson, an assistant of Thomas Edison, the man who made "Victrola" a household word, through his marketing ability.

Dickinson Mansion

The home was built by Judge Samuel Dickinson in 1740, with additions in 1752 and 1754. This was also the home of John Dickinson, son of Samuel, and generally known as the "Penman of the Revolution." John Dickinson was an early President of Delaware and later also President of Pennsylvania. In 1804, a fire badly damaged the house, but these scars are now being removed by the replacing of paneling duplicating the original. This house is a Registered National Historic Landmark.

Buena Vista

Buena Vista, named for the famous battle during the Mexican War, was built and occupied by John Middleton Clayton in 1846-47. Clayton was Secretary of State under President Taylor. Later the home was occupied by Clayton Douglass Buck, Governor of Delaware from 1929 to 1937 and U.S. Senator from 1943 to 1949. Recently his family gave Buena Vista to the State in memory of their esteemed ancestors.

The Lindens

The Lindens is located at Duck Creek Crossroads, Kent County, a few hundred feet south of the New Castle County Line. The home was built during 1765. Presently, the "Plank House," built about 1744, is located on the same two acre site. Nearby is the mill and mill pond, typical of the early 1700's. The site will be an attempt at a revival of a small "Colonial" community.

The Plank House

The Plank House is located on the same two acre site as "The Lindens." The house was not original to the site and was moved to it from the Smyrna vicinity.

Allee House

The Allee House is located in Bombay Hook National Wildlife Refuge Area, Kent County, Delaware. The use of land around the Allee House has been obtained from the federal government through a long-term lease. A few years ago the house was scheduled for demolition; but, it was then found to be historically and architecturally valuable and the Archives Commission interceded for its preservation.

Woodburn

Woodburn is the Governor's House. It was built in 1790, and is situated on part of an original 3,000 acre plot which William Penn granted to John Hillyard in 1683. It is said the house was the scene of one of the last slave-stealing raids by the notorious Patty Cannon.

Fort Christina Monument and Plank House

The "Monument" and "Plank House" are located at the eastern end of Seventh Street in Wilmington, on the site of the first permanent settlement in Delaware and are Registered National Historic Landmarks. The Monument is in recognition of the Swedish expedition under the leadership of Peter Minuit, which landed at this site in 1638. The Plank House was originally from the Price's Corner area and moved to the Fort Christina site as an additional memento of the early Swedish Colonists.

TABLE 2

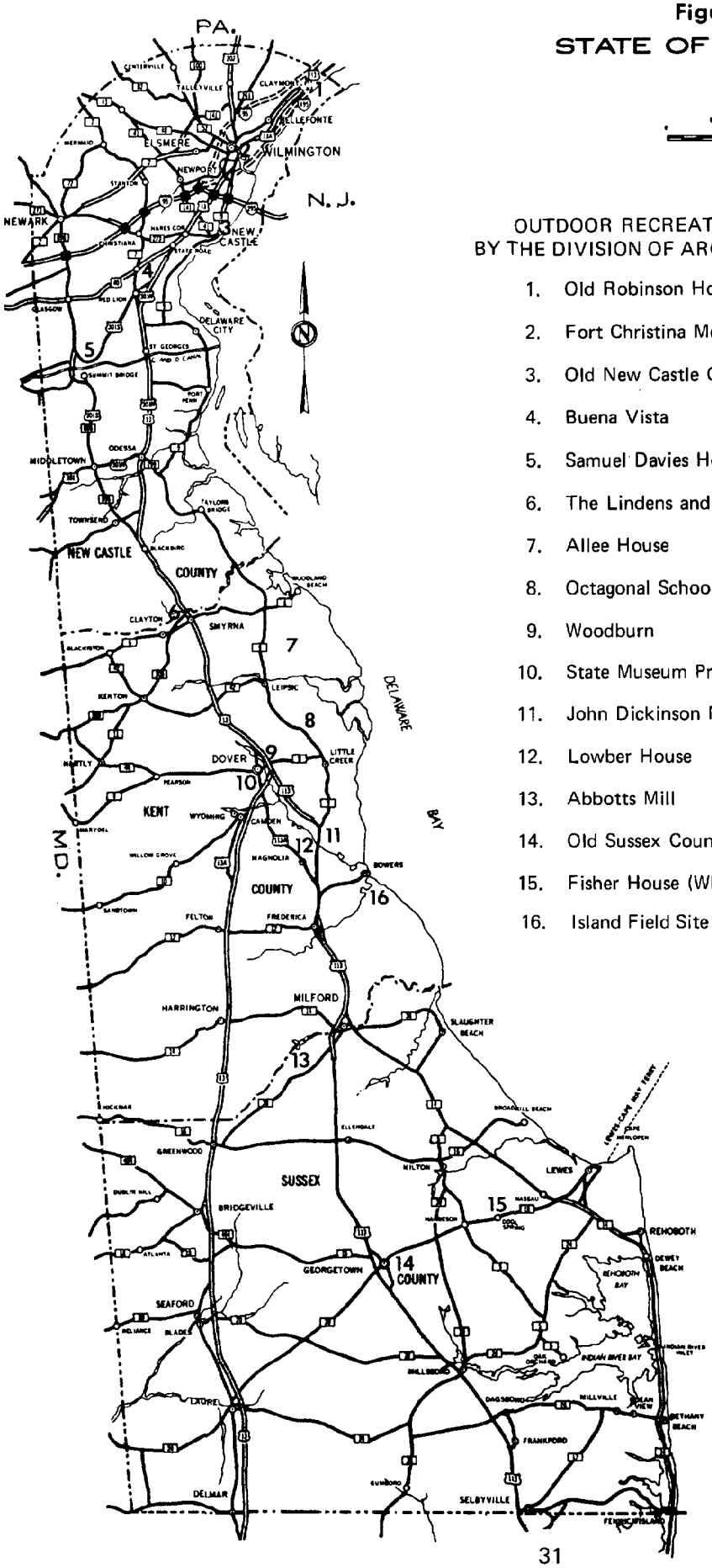
AREAS ADMINISTERED BY THE DIVISION OF ARCHIVES AND CULTURAL AFFAIRS

Historic Site	Area Under Agency In Acres	Significant [1] Construction Date
The Lindens		1765
Plank House	2.0	1744
State Museum - Presbyterian Church	1.1	1790
John Dickinson Mansion	18.3	1790
Fort Christina Monument [2]	0.9	1938
Old Sussex County Courthouse	0.2	1793
Fisher House (White Meadow Mansion)	0.5	1722
Allee House	0.0 [3]	1750
Samuel Davies House		1708
Sign of the Buck Tavern	5.0	1750
Buena Vista	51.9	1840's
Woodburn [4]	1.7	1790
Old Robinson House		1723
Early Swedish Block House [5]	1.2	1654
Abbotts Mill	0.0 [6]	1880 [7]
Octagonal School [8]		1838
Lowber House	.6	1774
Old New Castle County Court House	2.8	1732
Island Field Site [9]	5.0	700-1000
Total	94.8 [10]	

NOTES:

1. In some cases exact dates of construction are not available by record- most accepted date is shown here.
2. The monument erected in 1938 was to commemorate the landing of the first Swedes in 1638.
3. The land area is under Federal ownership (Bombay Hook National Wildlife Refuge) with a twenty year renewable lease to the State of Delaware.
4. Presently the Governor's House - Areas not used as living quarters are open to the public.
5. Believed to be the oldest building in the Delaware Valley.
6. Land is owned by the Delaware State Game and Fish Commission.
7. Date is very indefinite but it is believed to be during the early 1880's.
8. Acreage not available.
9. Major archeological find - estimated to have been occupied in 700 A.D.
10. Includes 3.5 acres used for record storage.

Figure 6
STATE OF DELAWARE



SCALE IN MILES

OUTDOOR RECREATION AREAS ADMINISTERED
BY THE DIVISION OF ARCHIVES AND CULTURAL AFFAIRS

1. Old Robinson House and Early Swedish Block House
2. Fort Christina Monument
3. Old New Castle County Court House
4. Buena Vista
5. Samuel Davies House and Sign of the Buck Tavern
6. The Lindens and Plank House
7. Allee House
8. Octagonal School
9. Woodburn
10. State Museum Presbyterian Church
11. John Dickinson Mansion
12. Lowber House
13. Abbotts Mill
14. Old Sussex County Court House
15. Fisher House (White Meadow Mansion)
16. Island Field Site

The Division of Archives and Cultural Affairs is reviewing and studying other areas and buildings of national and statewide significance in order to aid in the establishment of a complete Historic Register.

Island Field Site

The Island Field Site is by far the largest and most signficant prehistoric cemetery ever found on the Delaware peninsula. The site was first recognized as a site of Indian habitation during the 1930's, however, it was not until 1966 that full scale excavations were begun. In 1967 the full significance of the site was realized and the State acquired the property in 1968. Almost 100 burials have been found to date along with substantial numbers of artifacts. Evidence indicates that the site was occupied by two different groups at different times separated a period of no apparent occupancy. The earlier occupancy is thought to have been by the people of the late Middle Woodland Period culture during the period 700 - 1000 A.D. Temporary facilities are now provided at the site for viewing of the burial grounds, however, more extensive development of an educational and historic park, with related recreational facilities, has been discussed.

STATE FORESTS

A correlation of Figure 7 the State Forest Areas, and Table 7 shows that over 6,300 acres are under the administration of the State Division of Parks, Recreation and Forestry.

The purpose of the Division is to manage and maintain State Forests to the best advantage of the State. The agency has been further advised to:

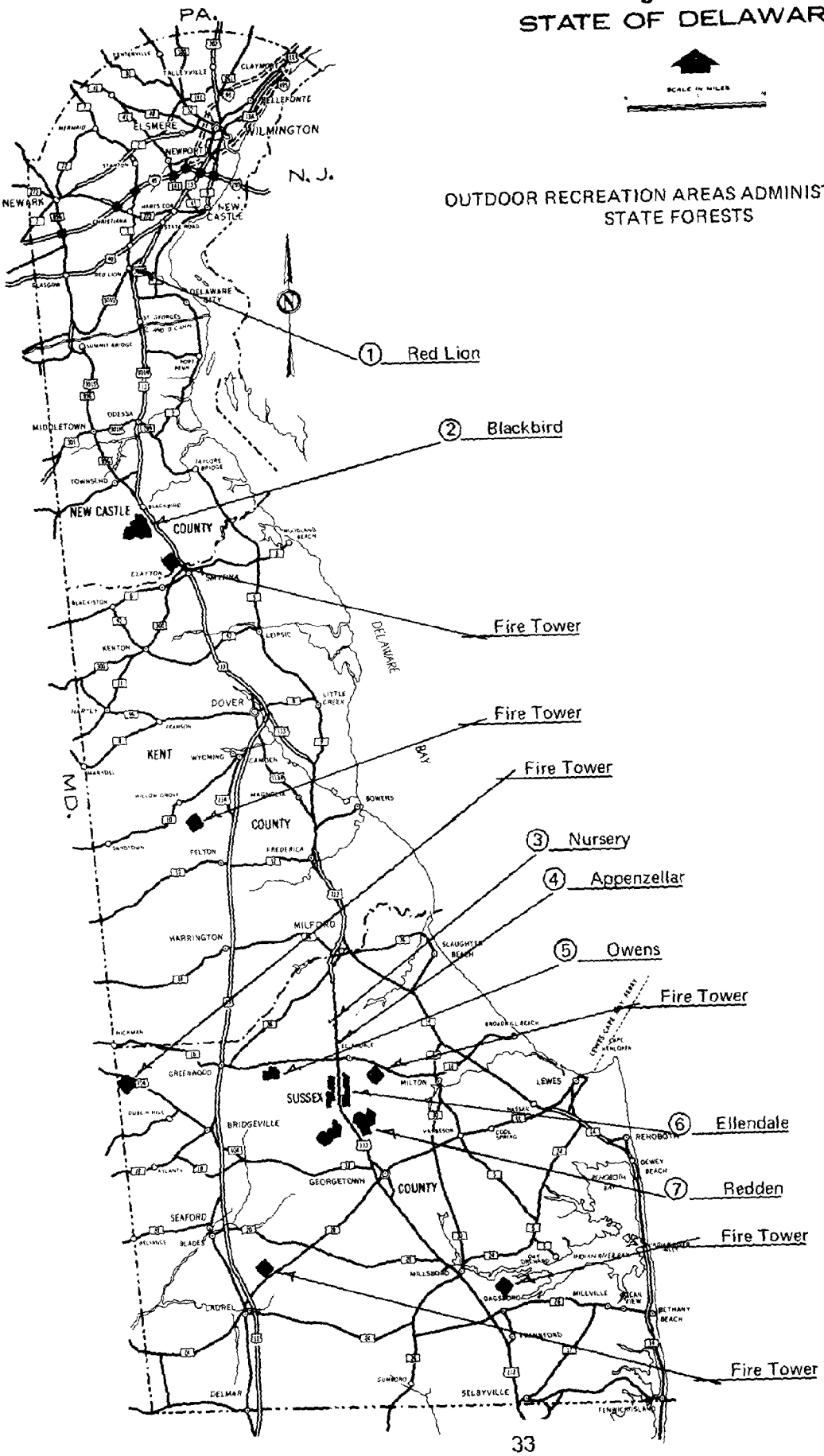
> " . . . Set aside within the State Forests, unusual or historic groves of trees or natural features particularly worthy of permanent preservation, and may make the same accessible and convenient for public use, and may dedicate them in perpetuity to the people of the State for recreation and enjoyment . . . "

Also it is the policy of the Division to make available to the public, in any suitable manner, these lands for certain types of outdoor recreation. It is for this reason Table 3 includes all State Forests and the activities permitted in them.

Since a State Forestry Commission was not actively in existence until after the "Great Conservation Movement," around the turn of the century, it is easy to see why the areas of larger population and more intense development have less land available for this conservation practice. For example, of the total 6,365 acres of State Forests shown in Table 3, and located on Figure 7 74 percent are in Sussex County, 3 percent in Kent County and 23 percent in New Castle County, the most densely populated county in Delaware. Presently the Division is doing all in its power to further preserve this natural resource by expanding its holdings, especially at the three larger tracts - Blackbird, Redden and Ellendale - which are greatly fragmented due to interior and contiguous exceptions.

Figure 7

STATE OF DELAWARE



OUTDOOR RECREATION AREAS ADMINISTERED AS STATE FORESTS

TABLE 3

DELAWARE STATE FOREST AREAS, FACILITIES AND ACTIVITIES PERMITTED AND AVAILABLE

Area	Area in Acres	Hunting	Picnicking	Hiking	Horse Riding	Sightseeing	Picnic Tables	Shelters	Fire Places
Blackbird	1,663	x	x	x	x	x	3		
Red Lion	5		x	x		x	4		2
Redden	3,113	x	x	x	x	x	1	1	
Owens	170	x,	x	x	x	x	3		
Appenzeller	124	x		x	x	x			
Ellendale	1,223	x	x	x	x	x	5	1	1
Nursery	58					x			
Fire Tower Areas	6			x		x			
Old Nursery	3								
TOTAL	6,365	5	5	7	5	8	16	2	3

The land is managed primarily as a timber and pulp producing crop land. Much of the acreage is reforested cut-over woodland which has been brought under State ownership and restored to a meaningful production rotation.

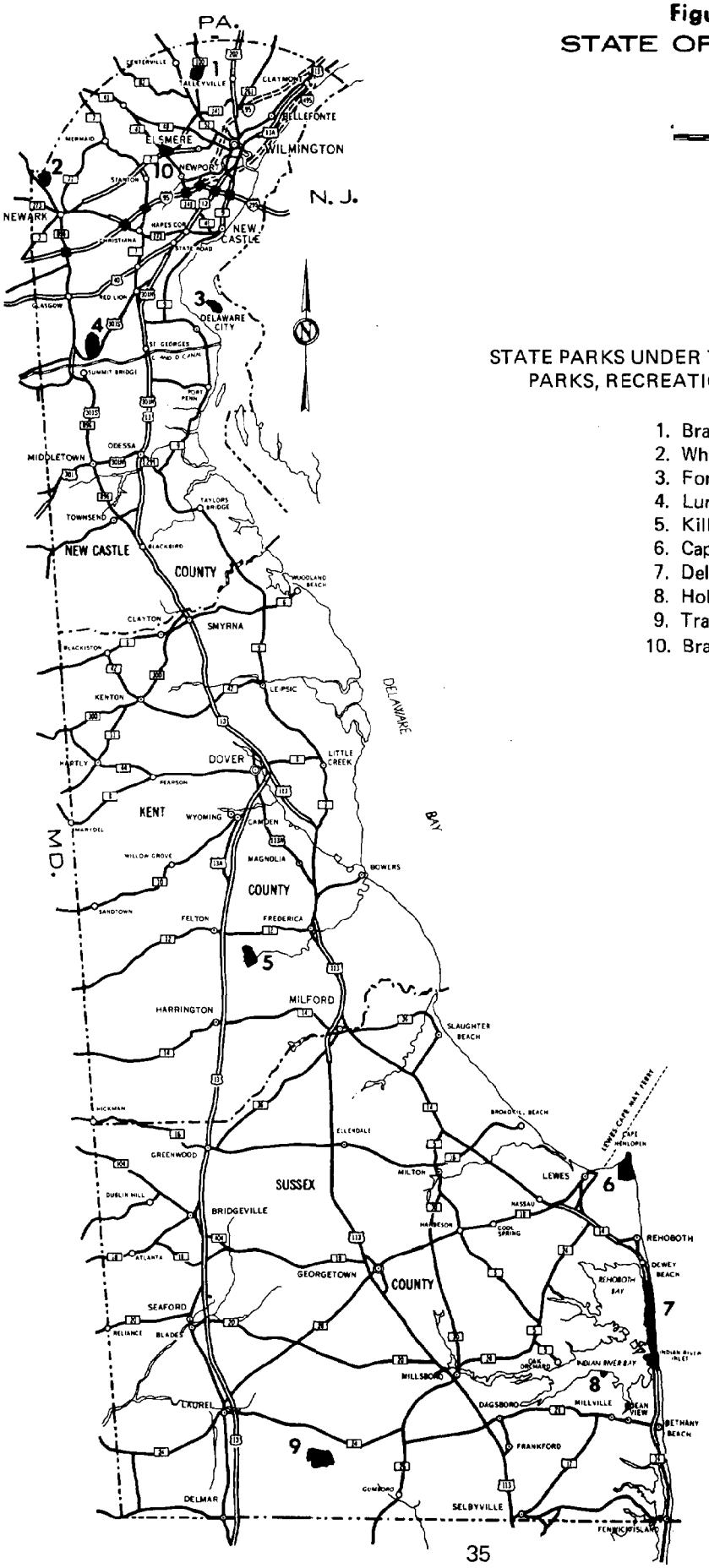
The forests are open to the public for hunting, fishing, hiking, horseback riding and picnicking. Limited picnic tables and related facilities are available in several areas.

STATE PARKS

The Division of Parks, Recreation and Forestry operates ten recreational facilities including two facilities which are classified as recreation areas and eight which are classified as parks. As shown in Figure 8, five of these facilities are located in New Castle County, one is located in Kent County, and four are located in Sussex County. The facilities must provide activities for persons interested in all types of recreation, thus making the task even harder. It must study and analyze the desires of the people, then project these needs and develop a realistic development plan which will satisfy both passive and active recreation enthusiasts.

Because of the complexity and yet singularity of activities and development facilities at each State Park, a further description of each is desirable to complete an inventory of these, the intensively developed and/or used outdoor recreation areas. This description will be provided in the plan section of this document.

Figure 8
STATE OF DELAWARE



STATE PARKS UNDER THE ADMINISTRATION OF THE PARKS, RECREATION, AND FOREST DIVISION

1. Brandywine Creek
2. White Clay Creek
3. Fort Delaware
4. Lums Pond
5. Killen Pond
6. Cape Henlopen
7. Delaware Seashore
8. Holts Landing
9. Trap Pond
10. Brandywine Springs

TABLE 4

OUTDOOR RECREATION AREAS AND PERMITTED ACTIVITIES UNDER THE JURISDICTION OF THE DIVISION OF PARKS, RECREATION AND FORESTRY

			Activities Permitted						Present Facilities			
Facility	Acres	Parcels	Fishing	Picnicking	Swimming	Hiking	Horseback Riding	Sightseeing	Tables	Shelters	Bathhouse	Fire Places
White Clay Creek	126.8	1		x		x		x				
Brandywine Creek	433.5	1	x	x		x	x	x	6			
Brandywine Springs	57.9	1		x		x	x	x	101	2		15
Fort Delaware	161.4	2	x	x		x	x	x	18			5
Lums Pond	512.3	1	x	x	x	x	x	x	110		2	32
Killens Pond	561.4	1	x	x	x	x	x	x	18			
Cape Henlopen	1,641.2	2	x	x	x	x	x	x	210			39
Delaware Seashore	1,759.4	3	x	x	x	x	x	x	41	1		
Holts Landing	33.0	1	x	x	x	x	x	x	14			
Trap Pond	965.3	1	x	x	x	x	x	x	320			37
Total	6,252.2											

FISH AND WILDLIFE AREAS

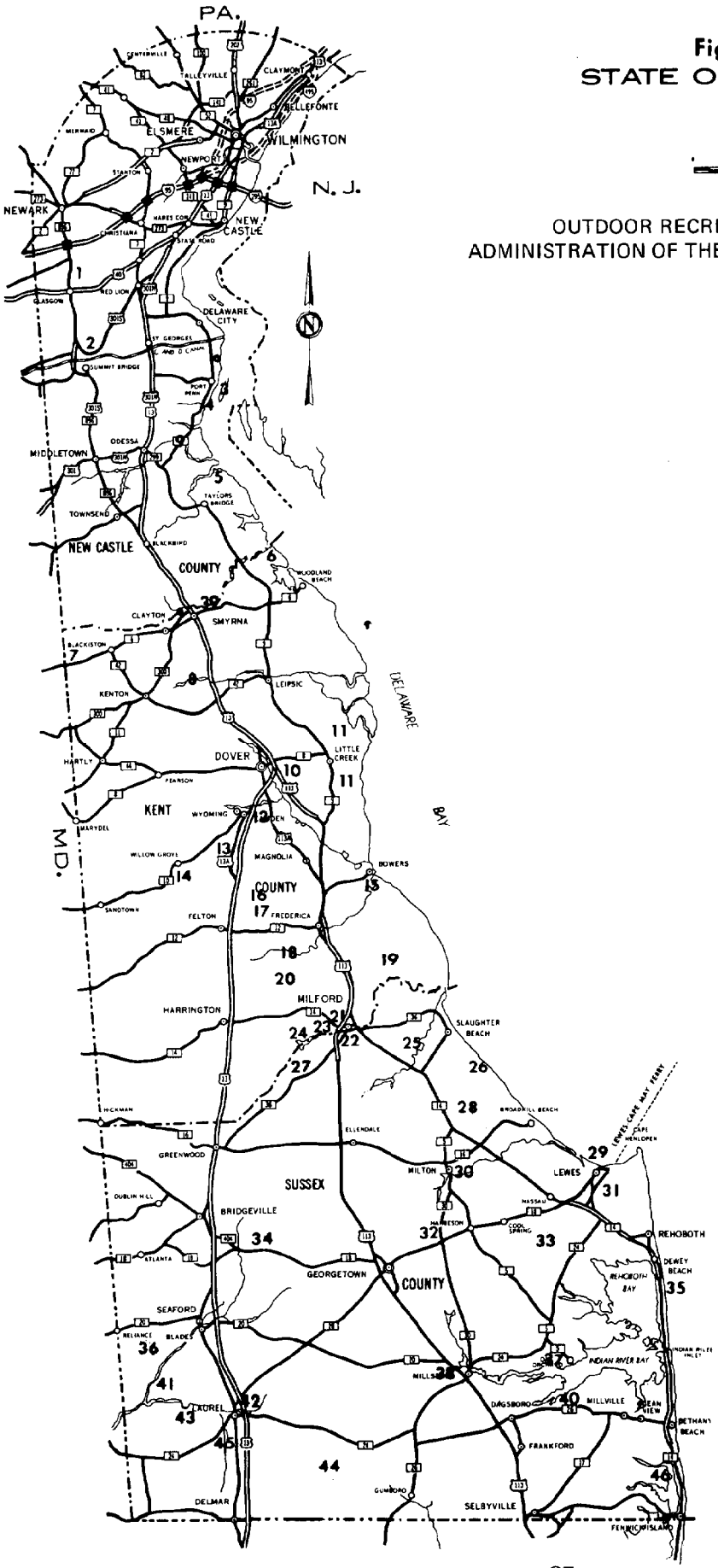
The Delaware Division of Fish and Wildlife administers approximately 18,700 acres of land. Table 5, in correlation with Figure 9, depicts these areas, their location, size and permitted recreation use by rank.

The Fish and Wildlife Division provides public hunting and fishing areas for all interested persons. Presently, the Division has 18,700 acres under its jurisdiction. However, the Division realizes that its present holdings are inadequate and continues a policy established a few years ago to acquire:

1. as many mill ponds as feasible - 20 by 1974
2. a minimum of 4,000 acres of additional wetland
3. a minimum of 7,100 acres of upland
4. additional access land at ponds sites

Figure 9 shows that the majority of the Commission's holdings are in the southern two counties, Kent and Sussex.

Figure 9
STATE OF DELAWARE



SCALE IN MILES

OUTDOOR RECREATION AREAS UNDER
ADMINISTRATION OF THE FISH AND WILDLIFE DIVISION

A.A. Access Area
W.A. Wildlife Area

Legend

1 Becks Pond*
2 Lums Pond
3 Reedy Island
4 Augustine Beach
5 Appoquinimink W.A.
6 Woodland Beach W.A.
7 Blackiston W.A.
8 Garrisons Lake
9 Silver Run W.A.
10 S.P.C.A. Dog Shelter
11 Little Creek W.A.
12 Moores Lake
13 Derby Pond
14 Petersburg W.A.
15 Bowers Beach
16 McGinnis Pond
17 Andrews Lake
18 Coursey Pond
19 Milford Neck W.A.
20 McCauley Pond
21 Haven Lake
22 Silver Lake
23 Griffiths Lake
24 Blairs Pond
25 Cedar Creek
26 Fowler Beach
27 Abbotts Pond
28 Primehook W.A.
29 Lewes A.A.
30 Milton A.A.
31 Gordon Pond
32 Gravel Hill
33 Rabbits Ferry
34 Tussock Pond (Collins)
35 Rehoboth Bay A.A.
36 Craigs Pond
37 Rosedale Beach A.A.
38 Ingrams Pond
39 Duck Creek A.A.
40 Pepper Creek
41 Nanticoke W.A.
42 Records Pond
43 Portsville Pond
44 Raccoon Pond
45 Horsey Pond
46 Assawoman W.A.

*Leased to New Castle County Parks and Recreation Commission Dec. 14, 1967

TABLE 5

OUTDOOR RECREATION AREAS UNDER THE ADMINISTRATION OF THE DIVISION OF FISH AND WILDLIFE

Key: WA - Wildlife Area
AA - Access Area

Facility	Acres Total	Acres Land	Acres Water	Major Recreation Activity By Rank: Driving and Sightseeing	Swimming	Salt Water Fishing	Fresh Water Fishing	Picnicking	Nature Study	Boating	Hunting - Small Game	Hunting - Big Game	Hunting - Waterfowl
Becks Pond [1]	55.0	7.0	48.0		1		2	4		3			
Lums Pond	563.0	413.0	150.0				1			3	2		
Reedy Island	50.0	50.0		3						1			2
Augustine Beach	190.7	190.7				1		3		2			4
Appoquinimink W.A.	34.0	34.0											1
Woodland Beach	3,542.9	3,542.9		1		4			3	5			2
Garrisons Lake	101.9	2.9	99.0				1	2		3			
Moores Lake	58.7	12.2	46.5	4			1	2		3			
Little Creek W.A. - North	345.3	345.3		3							1		2
SPCA Dog Shelter	2.0	2.0											
Little Creek W.A. - South	2,872.0	1,607.0	1,265.0	3							1		2
Petersburg W.A.	3,320.2	3,320.2		1				4	5		2	3	
Derby Pond	15.0	.3	14.7				1			2			
McGinnis Pond	137.6	102.6	35.0		4		1	2		3			
Bowers Beach	13.1	13.1			2	1				3			
Andrews Lake	24.3	12.3	12.0				1			2			
Coursey Pond	63.8	4.8	59.0				1	2		3			
McCauley Pond	55.0		55.0				1			2			
Milford Neck	1,370.8	1,370.8		5					3		1	2	4
Griffiths Lake	35.0	.3	34.7				1	2		3			
Blairs Pond	94.0	67.0	27.0				2	1		3			
Abbotts Pond	25.3	10.3	15.0	3			1			2			
Haven Lake	83.7	8.3	75.4				2	3		1			
Silver Lake	34.3	.3	34.0				1			2			
Cedar Creek	15.0	15.0				1							
Fowler Beach	2.0	2.0				1							
Primehook W.A.	635.0	635.0					4				2	3	1
Milton A.A.	.7	.7				1		3		2			
Lewes A.A.	1.7	1.7				1				2			
Craigs Pond	16.0	2.0	14.0				1	3		2			
Gravel Hill	7.4	2.4	5.0				1	2		3			
Rabbits Ferry	1.8	1.8		4			1	3	5	2			
Portsville Pond	33.0	18.0	15.0	4			1	2	5	3			
Tussock Pond (Collins)	3.3	3.3					1						
Records Pond	99.8	8.9	90.9	4			1	3	5	2			
Horsey Pond	68.0	8.0	60.0				1		2				
Raccoon Pond	4.4		4.4				1						
Ingrams Pond	43.0	8.2	34.8								3	2	1
Rosedale Beach A.A.	10.0	10.0				1		2		3	4	5	
Pepper Creek	17.5	17.5							2				1
Assawoman W.A.	1,459.9	1,059.9	400.0			1				2			
Nanticoke W.A.	925.0	925.0				2				1			
Gordon Pond	300.0		300.0						3		1	2	
Duck Creek	12.6	12.6					1	3		2			
Silver Run	561.9	561.9				4				5	1	3	2
Rehoboth Bay A.A.	10.0	10.0				2		3		1			
Blackiston	1,417.1	1,417.1					3				1	2	
	18,732.7	15,838.3	2,894.4										

[1] Leased to New Castle County Parks Department

Three large tracts of land in central Delaware are used for both large and small game hunting. These wildlife areas are Blackiston, near Kenton, Petersburg near Felton, and Milford Neck, near Milford. Hunting is also allowed along the Chesapeake and Delaware Canal lands. Although the Federal government owns most of these lands, they are used for public hunting through a licensing agreement between the two agencies (Federal and State).

Four of the State waterfowl hunting areas exceed 500 acres. Woodland Beach Wildlife Area, in northeast Kent County, consists of 3,543 acres. The Little Creek Area, east of Dover, is in two sections; 345 acres in the northern part and 2,872 in its southern counterpart, making a total of 3,217 acres. Primehook Wildlife Area is in northeast Sussex County and contains 635 acres. In southeast Sussex County is the Assawoman Wildlife Area with 1,460 acres.

The Woodland Beach and Little Creek areas both have large frontages on the Delaware Bay and are very close to the Bombay Hook Migratory Waterfowl Refuge (Federal). The Primehook area is near an area being acquired for another federal wildlife area similar to the Bombay Hook Migratory Waterfowl Refuge. The Assawoman Wildlife Area is on Little Assawoman Bay and is very close to the Atlantic Ocean. There are a few other areas used for waterfowl hunting, but they are presently too small for much development. Other game, both large and small, is also prevalent and accessible to sportsmen in these areas.

The Delaware River, the Delaware Bay and the Atlantic Ocean constitute the eastern boundary of the State, affording salt water fishermen some of the best fishing in the country. The Fish and Wildlife Division, in order to provide access to these waters as well as to other tidewater rivers and bays, has acquired many conveniently located boat launch sites. The most heavily used boat launches that they have constructed are as follows: Augustine Beach on the Delaware River, Woodland Beach and Bowers Beach on the Delaware Bay, several sites in the Indian River - Rehoboth Bay - Assawoman Bay area, Lewes on the Lewes and Rehoboth Canal, Milton on the Broadkill River and Philips Landing on the Nanticoke River, now known as Nanticoke W.A. (Some of these boat launch sites are included in the survey shown elsewhere in this report).

Saltwater species usually found in the Delaware Bay or the Atlantic Ocean include croaker, kingfish, drum, trout, flounder, bluefish, striped bass, tautog, spots and porgy. Several miles offshore in the Atlantic Ocean are cod, tuna and marlin.

The Fish and Wildlife Division has purchased many fresh water ponds and has reflooded other old pond sites, providing excellent fresh water fishing throughout the State. Two of the most popular State-owned ponds in New Castle County are Becks Pond, south of Newark, and Lums Pond, just north of Chesapeake and Delaware Canal. Good fishing in Kent County can be found at Garrisons Lake, Andrews Lake, Derby Pond, McGinnis Pond, Coursey Pond and McCauley Pond. Near Milford are Silver Lake, Haven Lake, Griffiths Lake and Blairs Pond; all four are split by the Kent - Sussex County Line.

Sussex County Ponds that offer good fishing are Abbotts Pond, Craigs Pond, Portsville Pond, Records Pond, Horsey Pond, Raccoon Pond and Ingrams Pond. Many of these ponds have attractive picnic areas. Photography possibilities are numerous at these places, particularly at some of the clear water ponds in the southern part of the State.

Trout fishing in Delaware is on a put-and-take basis. Annual stocking is necessary because of the hot summer. Other fresh water game-fish, plentiful in Delaware, are chain pickerel, large mouth bass, crappie bass, both white and yellow perch, bluegill, sunfish and the sometimes undesirable catfish and carp.

ROADSIDE REST AREAS

The Division of Highways maintains 36 roadside rest and picnic areas throughout the State, with more being planned or under construction. The level of development varies with all areas. All have picnic tables and some with sanitary facilities, provision for outdoor cooking or playground equipment.

The State has several parcels of land that were purchased in conjunction with road building that are large enough for recreational uses. Some are used as picnic areas and rest stations, others are large enough for nature study, and many of the exhausted borrow pits have recreational possibilities. The Little League baseball fields at Smyrna-Clayton are on former borrow pits and are good examples of land reclamation.

There is no record of law which mandates the use of highway land to outdoor recreation, unless it is in compliance with the federal regulations established by the Bureau of Public Roads. The site north of Smyrna, depicted on Figure 10, is a large area that has been established as a roadside rest by the U.S. Bureau of Public Roads.

The Division of Highways has, however, adopted the policy that it should effectively and fully utilize its lands and is striving to follow this policy by establishing and maintaining roadside rests, picnic areas, and playgrounds - facilities which will aid the traveler.

PUBLIC EDUCATION INSTITUTIONS

Outdoor athletic facilities at many schools are available after school hours for recreational purposes. Usually there is a nominal charge for the use of facilities to pay for extra custodial expense and utilities. It is estimated that 5,000 acres of land are under the jurisdiction of the Department of Public Instruction.

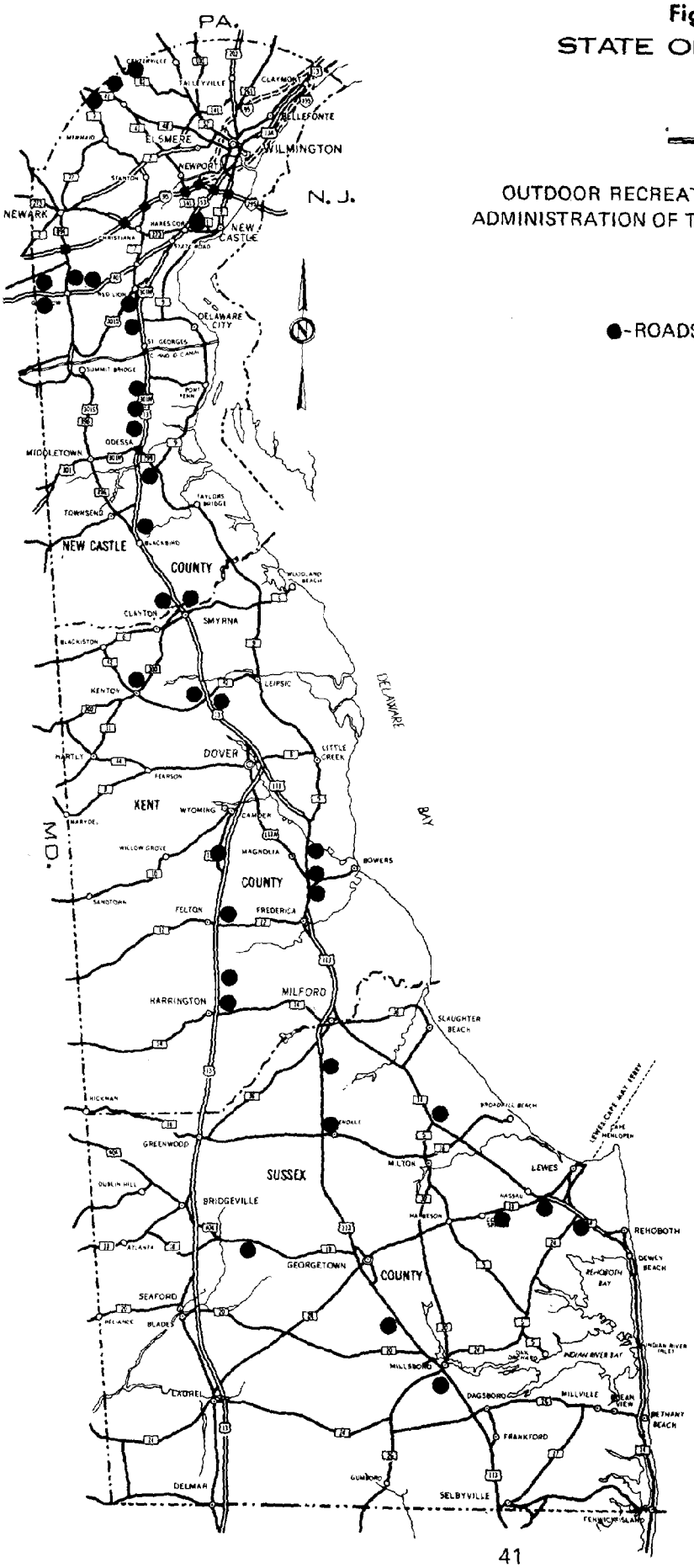
Whether or not a certain school site is available for outdoor recreation use is at the discretion of the individual school district. However, the State has adopted the policy that the areas should be made available if there is no interference with school use.

SUMMARY - STATE CONTROLLED OUTDOOR RECREATION AREAS

Approximately 36,700 acres of outdoor recreation lands are owned or controlled by the State. These areas range from forests to seashore beaches, from wildlife area to picnic and play areas, and from historic and prehistoric sites to modern recreational complexes. Table 6 summarizes these ownerships by administrative agency:

Figure 10

STATE OF DELAWARE



SCALE IN MILES

OUTDOOR RECREATION AREAS UNDER THE ADMINISTRATION OF THE DIVISION OF HIGHWAYS

●-ROADSIDE RESTS

TABLE 6

STATE-OWNED LANDS AVAILABLE FOR OUTDOOR RECREATION

Agency	Acres*
Department of State:	
Division of Archives and Cultural Affairs	95
Department of Transportation:	
Division of Highway	100
Public Educational Facilities	5,188
Department of Natural Resources and Environmental Control:	
Division of Fish and Wildlife	18,733
Division of Parks, Recreation and Forestry	12,617
Total State	36,733

* Areas rounded to nearest acre

INVENTORY OF PUBLIC AREAS USED FOR OUTDOOR RECREATION UNDER COUNTY AND MUNICIPAL OWNERSHIP

Public bodies which have jurisdiction over outdoor recreation areas other than the State and federal governments are counties and incorporated municipalities. To date only one of the three counties and, nineteen of the fifty-three municipalities, have established public outdoor recreation areas or manage lands for outdoor recreation purposes.

COUNTY OUTDOOR RECREATION AREAS

With the exception of the State and federal agencies, New Castle County has the largest total amount of outdoor recreation land under its jurisdiction, Table 7 shows that New Castle has jurisdiction over 2,200 acres ranging in size from play lots under five acres, to a reservation of over four hundred and sixty acres. Most of the areas are classified as neighborhood or district parks where very active recreation pursuits are conducted. It can be seen that the majority of the County Parks have been strategically located to serve the more densely populated areas. It appears that the most prevalent uses connected with these eighty-three park areas are playgrounds, picnicking, basketball, baseball and of course open-areas. These outdoor recreation areas presently under the jurisdiction of the New Castle County Park and Recreation Commission are contributing to the overall need for recreation areas for Delawareans, as well as contributing to the need for urban recreation areas.

TABLE 7

OUTDOOR RECREATION AREAS UNDER THE JURISDICTION OF THE NEW CASTLE COUNTY PARKS AND RECREATION COMMISSION

KEY

Type	Description	Use Code
I	Playlot - under 5 acres	1 Baseball
II	Neighborhood Park - 5 to 30 acres	2 Basketball
III	District Park - 30 to 75 acres	3 Football
IV	Regional Park - 75 to 200 acres	4 Playground
V	Reservation - Over 200 acres	5 Picnic
		N None Reported

No.	Name	Acres	Type	Use
1	Airport Villa	2.00	I	N
2	Alapocas Woods	109.60	IV	1,3,5
3	Alban Park	5.36	II	N
4	Albertson Park	6.47	II	
5	Ashbourne Hills	18.65	II	
6	Banning Park	156.42	IV	1,2,4,5
7	Becks Pond	55.00	III	5
8	Bonsall Tract	17.68	II	
9	Brandywine Spring Manor	4.10	I	
10	Brookbend Park	1.24	I	
11	California Run Park - North (Includes Clair Estates and Marshallton Heights)	4.01	I	

TABLE 7 (continued)

OUTDOOR RECREATION AREAS UNDER THE JURISDICTION OF
THE NEW CASTLE COUNTY PARKS AND RECREATION COMMISSION

No.	Name	Acres	Type	Use
12	California Run Park - South (Includes Kiamensi Gardens, Rolling Hills and Windermere)	19.15	II	1,5
13	Canby Park West (Includes Canby Park West and Cleland Heights)	67.61	III	1,4,5
14	Carrcroft	1.12	I	
15	Chapelcroft	3.40	I	N
16	Chelsea Manor Park (Includes Chelsea Estates and Wilmington Manor)	31.67	III	1,2,3,4,5
17	Cool Run Park (Includes Chestnut Hill Estates, Tod Estates and Cherokee Woods)	25.06	II	1
18	Carousel Farms	119.58	IV	
19	Coventry Ridge Park	73.16	III	
20	Chapel Hill	7.89	II	
21	Darby Woods	2.73	I	
22	Dartmouth Woods	4.80	I	N
23	Delcastle	460.40	V	N
24	Delpark Manor	3.51	I	1,2,5
25	Devon	4.13	I	
26	Devon Shire	6.23	II	
27	Dunlinden Acres	3.02	I	2,5
28	Dunleith	9.42	II	2,4
29	Eastburn Acres	5.06	II	1,2,4
30	Edenridge	6.09	II	
31	Fair Rock Park (Includes Blue Rock Manor and Fairfax)	8.80	II	1,2,4,5
32	Faulkland Heights	2.00	I	
33	Glendale	3.60	I	1,2
34	Glenville	44.30	III	1,2,4,5
35	Grayling	.70	I	2,4
36	Graylyn Hills Park (Includes Graylyn Crest and Holiday Hills)	15.69	II	
37	Graylyn Park South (Includes Graylyn Crest 2, Chatthan and Graylyn Crest 4)	7.32	II	2
38	Green Hill Golf Course	123.00	IV	
39	Greenmeadow	2.33	I	
40	Grendon Farms	3.96	I	
41	Gurfield Park	5.67	II	
42	Harmony Brook Park (Includes Harmony Hills, Brookhaven Schroeder Property and Sheffield Manor)	60.79	III	1,2,4,5
43	Harvey Mill Park (Includes Holiday Hills 2, Lancashire and Kingsridge)	16.77	II	N
44	Heritage Park (Includes Heritage Park and Grendon Farms 2)	9.40	II	1,2,4,5
45	Highland West	4.70	I	
46	Holly Hill	.40	I	
47	Hyde Park II	5.20	II	5
48	Jefferson Farms	7.29	II	N
49	Lewolen Greene Park	89.00	IV	
50	Llangollen	74.75	III	
51	Lonquien Farms	2.91	I	
52	Lynnfield	2.87	I	

TABLE 7 (continued)

OUTDOOR RECREATION AREAS UNDER THE JURISDICTION OF
THE NEW CASTLE COUNTY PARKS AND RECREATION COMMISSION

No.	Name	Acres	Type	Use
53	Meadowood	10.66	II	2,4,5
54	Milltown Park (Includes Limestone Gardens, Maple Crest and Sheridan Squire)	13.48	II	1,4,5
55	Mont Berne Park (Includes Glen Berne Estates and Rothwell Property)	8.11	II	
56	Montclaire Park	1.40	I	
57	Naamans Park - North (Includes the Timbers and Aston)	8.82	II	
58	North Crest	1.18	I	
59	Oak Lane Manor	4.40	I	
60	Perkins Run Park (Includes Rolling Park, Gwinhurst, Claymont Heights, Northridge, Greenmount and Hillendale)	27.73	II	4,5
61	Penn Acres	7.78	II	
62	Pinecrest	4.12	I	4
63	Pleasant Hills	25.32	II	
64	Radnor Green	5.28	II	
65	Rambleton Acres	4.71	I	
66	Riverbend Park (Includes Sycamore Gardens, Newkirk Estates and Old Mill Manor)	10.52	II	4
67	Robscott Manor	6.92	II	
68	Rockford Park	103.70	IV	
69	Sellers Park	57.33	III	
70	Shellburne	4.22	I	
71	Shellpot Park North (Includes Surrey Park, Delaynn, Cardiff, Woodbine and Tarleton)	19.01	II	
72	Shellpot Park - South (Includes McDaniel Crest, Concord Manor and Goodley Place)	17.33	II	
73	Sherwood Park	4.15	I	4,5
74	Simones Gardens	5.94	II	
75	Sherwood Park II	3.93	I	2,4
76	Stoney Run Park (Includes Carrcroft Crest and Northwood)	10.00	II	
77	Westgate Farms	7.27	II	4
78	Westview	1.65	I	2,4
79	Wilmington Manor Gardens	9.50	II	1
80	Windy Mill Park (Includes Windy Hills, Country Squire and Redmill Farms)	23.39	II	1,4,5
81	Woodbrook	1.00	I	
82	Woodland Run Park (Includes Oak Hill, Willow Run, Woodland Heights, Brookland Terrace Woodland Park, Tybrook and Brookemeade)	57.13	III	1,2,3
83	Woodley Park (Includes Sharpley and Woodbrook III)	34.83	III	
	TOTAL AREA	2,226.82		

MUNICIPALLY CONTROLLED OUTDOOR RECREATION AREAS

New Castle County

As depicted on Figure 11, most of the municipally owned public recreation land in New Castle County is in Elsmere, Newark, New Castle and Wilmington. Elsmere has four playground areas, three of which are strictly of the neighborhood playground type. The other is similar in nature but also includes a picnic area.

Newark has almost a hundred acres of city-owned land devoted to public recreation use. Also 83.5 acres of land is owned by the Greater Newark Recreation Association.

Battery Park in the City of New Castle covers 78.00 acres of land. This property has almost one-half mile of frontage on the Delaware River.

The Director of Parks and Recreation controls the park system in Wilmington. The City has had an active park and recreation program since 1883. To date the City controls 798.2 acres of outdoor recreation areas, some of which are located outside the city limits.

TABLE 8

MUNICIPALLY CONTROLLED OUTDOOR RECREATION AREAS
New Castle County

Municipality	Total Acres	Number of Parks	Predominant Use
Delaware City [1]	2.2	1	Park, playfield
Elsmere	25.0	4	Playgrounds, picnic
Newark [2]	98.0	9	Parks, playfields, picnic areas
New Castle	78.0	1	Park, playfield
Wilmington [3]	798.2	44	Intensively developed

[1] Also has 10.0 acres owned by Delaware City Commission Park District

[2] Also has 83.5 acres owned by Greater Newark Recreation Association

[3] 290.7 acres lie outside City limits; 507.4 acres are within the City. An additional 321.9 acres are leased to other agencies of which New Castle County Park Commission has jurisdiction over 232.6 acres.

Kent County

The towns and cities in Kent County that own recreation areas include Cheswold, Dover, Farmington, Leipsic, Smyrna and Wyoming. Dover has a good park system with a fine beach area as its leading attraction. Smyrna and Wyoming also have scenic water areas as part of their park systems. Figure 11 and Table 9, Municipally Owned Outdoor Recreation Areas, shows the recreation acres held by each municipality in Kent County (including impounded water bodies).

TABLE 9

MUNICIPALLY CONTROLLED OUTDOOR RECREATION AREAS
Kent County

Municipality	Total Acres	Number of Parks	Predominant Use
Dover	263.2 (with water)	20	Swimming, playfields, boating, parks, tot lots playgrounds
Farmington	5.0	1	Playfield picnic area
Leipsic	2.9	1	Athletic field
Smyrna	38.0	4	Swimming, playfields, parks
Wyoming	3.2	1	Park

Sussex County

In Sussex County, Bethany Beach, Delmar, Georgetown, Lewes, Milford, Millsboro, Milton, Rehoboth Beach and Seaford have municipally owned recreation areas, Figure 11 and Table 10.

Bethany Beach and Rehoboth Beach have excellent beaches on the Atlantic Ocean. Lewes has, in addition to its extensive park lands along the Lewes and Rehoboth Canal, a popular public beach area just west of the Lewes-Cape May Ferry terminal. Milford is now improving its park area on the west side of Marshall Pond.

TABLE 10

MUNICIPALLY CONTROLLED OUTDOOR RECREATION AREAS
Sussex County

Municipality	Total Acres	Number of Parks	Predominant Use
Bethany Beach	26.0	1	Swimming
Delmar	5.5	1	Playground, Playfield
Georgetown	1.0	1	Park
Lewes	111.5	4	Swimming, Park
Millsboro	6.5	1	Picnic, Playfield
Milton	14.0	1	Playfield, boating, fishing
Rehoboth Beach	77.0	8	Swimming, fishing, boating
Seaford	10.0	2	Swimming, playfield, picnic
Milford	3.0	1	Playfield, park

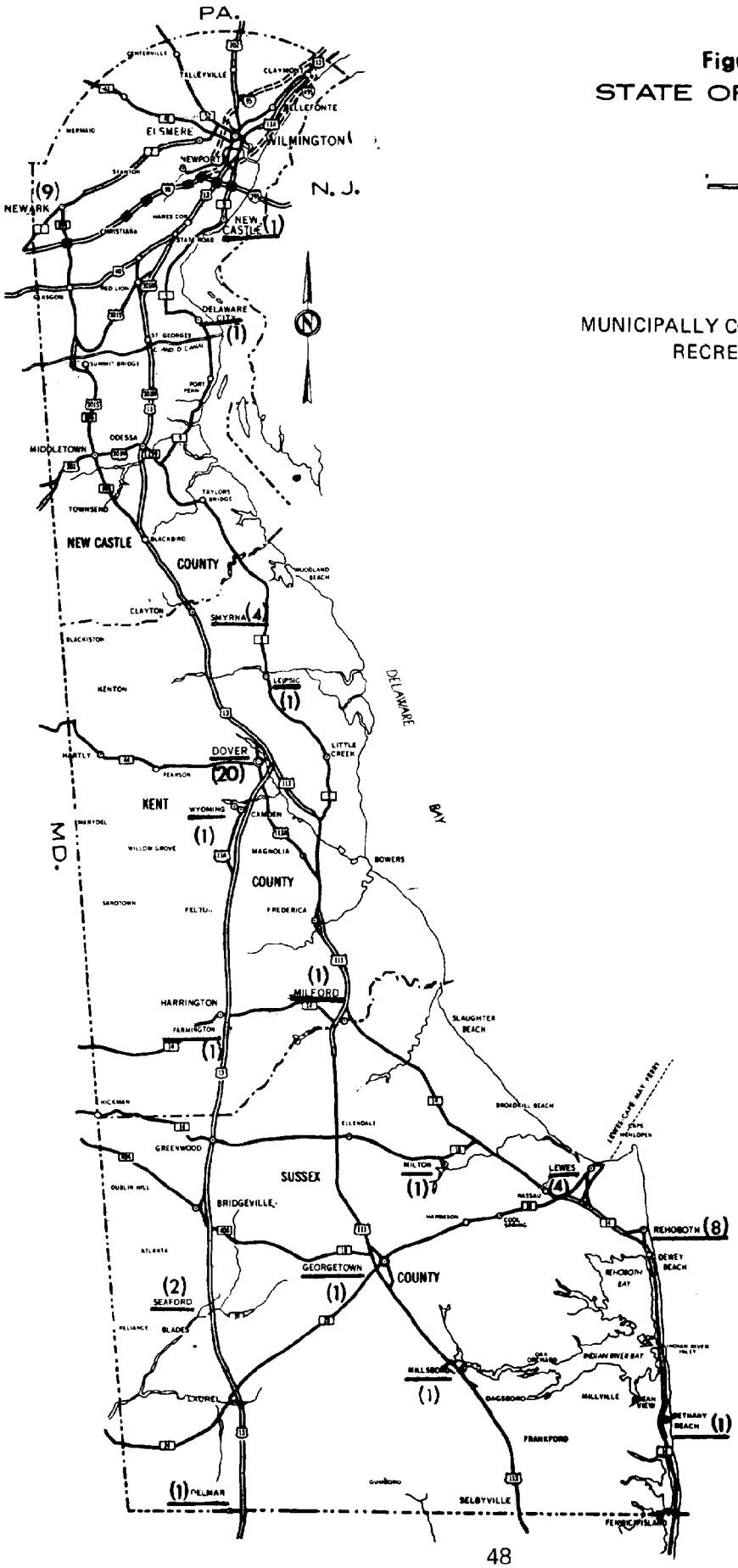


Figure 11
STATE OF DELAWARE

MUNICIPALLY CONTROLLED OUTDOOR RECREATION AREAS

PRIVATE RECREATION IN DELAWARE

Approximately eight thousand acres of land and water are devoted to private recreation. The county totals are 1,300 acres in New Castle, 3,900 acres in Kent and 2,800 acres in Sussex.

NEW CASTLE COUNTY

There are so many small areas that the average size is less than 20 acres.

Game playing and picnicking are the most prevalent uses at these places in New Castle County. Also popular are sightseeing and hiking. Northern New Castle County has the only rolling terrain in Delaware, and the small amount of winter skiing that is done in the State is done there. The streams that are most desirable for canoeing are in this same area.

TABLE 11

PRIVATE OUTDOOR RECREATION AREAS
New Castle County

	ACTIVITY											
Name	Sightseeing	Picnicking	Athletic Fields	Nature Study	Hiking	Bicycling	Swimming	Fishing	Boating	Hunting	Golf	Camping
Noxontown Pond	x	x	x	x	x		x	x	x			
Collins Beach									x			
Delaware River Outboard Marina									x			
Ft. Christina Marina							x		x			
Castle Hills												
Liftwood												
Brookview Apartments												
Brookside Park												
Garfield Park			x									
Forwood												
Redmont			x									
Camp Mattahoon			x	x		x						x
Rambler Boat Works									x			
Eleutherian Mills*			x									
Old Swedes Church*			x									
Corbit-Sharp House*			x									
New Castle Historic District*			x									

* Registered Historic Landmark

KENT COUNTY

Hunting and picnicking are the leading activities at Kent County private recreation areas. Swimming and the operation of private aircraft are also enjoyed by large numbers of people.

TABLE 12

PRIVATE OUTDOOR RECREATION AREAS
KENT COUNTY

Name	ACTIVITY											
	Sight Seeing	Picnicking	Athletic Fields	Nature Study	Hiking	Horseback Riding	Swimming	Fishing	Boating	Hunting	Golf	Camping
American Legion							X					
Artis Stables						X						
Ash Park		X	X									
Barratts Chapel				(MUSEUM)								
Bowers Beach								X	X			
Camp George		X	X	X	X	X		X		X		X
Councils Stables										X		
Del Air Park				(FLYING)								
Del Loo	X			X								
De Marie Farm										X		
Dover Fairways											X	
Eastern Shore Fox Club										X		
Garrisons Lake Golf		X	X				X				X	
Go-Cart			X									
Felton Viola Ruritan		X										
Fork Landing				X					X			
Haven Lake		X					X					
Jenkins Airport	X			(FLYING)								
Kent Swim Club		X	X				X					
Mapledale CC							X				X	
Milford Airport				(FLYING)								
Miller Farm			X					X				
Millers Pond								X		X		
Morris Ponds										X		
The Oaks		X										
Pleasanton Farm										X		
Smyrna Airport				(FLYING)								
Smyrna Swimming		X	X				X					
Voshells Pond		X							X			
Wheelers Park		X	X	X	X	X		X				
Woodland Beach									X	X		
Woodside Railroad		X										
Kenton Gun Club										X		

SUSSEX COUNTY

Camping is popular useage of private recreation areas in Sussex County, especially in the southeast part of the County, because of the many other activities associated with the Atlantic Ocean and Rehoboth and Indian River Bays. Golfing and boating facilities are also heavily used. The next most popular activity occurring on private recreation land in the county is fishing, both fresh and salt water versions being excellent at most times. Table 13 shows the private recreation areas and the recreation activities they support.

TABLE 13

PRIVATE RECREATION AREAS
SUSSEX COUNTY

Name	ACTIVITY											
	Sight Seeing	Picnicking	Athletic Fields	Nature Study	Hiking	Bicycling	Swimming	Fishing	Boating	Hunting	Golf	Camping
Arnold Palmer Dr. Range											X	
Bay Shore Campsites							X	X	X			X
Camp Antiock			X									X
Careys Camp			X									X
Collins Pond								X	X			
Cubbage Pond							X	X	X			X
Del-Mar-Va Camp			X									X
Fleetwoods Pond					X			X				
Hearn Pond							X	X				
Hickmans Marina								X	X			
Indian River Yacht Basin								X	X			
Log Cabin Hill		X	X					X				X
Love Creek Trailer Park		X										X
Lowes Recreation Area							X	X	X	X		X
Lynn Lee Mobil Village							X	X	X			X
Masseys Landing								X	X			
Misspillion Light								X	X			
Murrays Farm	X	X		X	X		X	X	X	X		
Nanticoke Shores, Inc.								X				X
Old Landing Golf Course											X	
Old Inlet Campsite							X	X	X			X
Pier Point Marina							X		X			
Pine Haven Campsite		X										X
Pot-Nets Park		X	X				X	X	X			X
Rainbow Cove Marina									X			

TABLE 13 (continued)

PRIVATE RECREATION AREAS
SUSSEX COUNTY

Name	ACTIVITY											
	Sight Seeing	Picnicking	Athletic Fields	Nature Study	Hiking	Bicycling	Swimming	Fishing	Boating	Hunting	Golf	Camping
Rehoboth Airport					(FLYING)							
Rehoboth Bay Sailing Area		X					X	X	X			
Rehoboth Bay Marina								X	X			X
Rehoboth Country Club							X				X	
Sandy Cove Camping Area		X					X	X	X			X
Seaford Golf			X								X	
Seaside Campsite		X					X	X	X			X
Shawns Hideaway		X					X	X	X			X
Shawnee Country Club							X				X	
Shockleys Boat-Tel								X	X			
South Shore Marina								X	X			
Sussex Rec. Center			X (archery)								X	
Sussex Country Club							X				X	
Swann Keys												X
Tuckahoe Acres			X				X	X	X			X
Whitehouse Farm							X	X	X			X

In addition to these areas, private conservation groups hold title to approximately 13,000 acres, most of which is owned by Delaware Wildlands, Inc. This conservation group, established in 1961, is dedicated to the preservation of properties it deems irreplaceable and worthy of protection in their natural state. The emphasis of this organization originally was the preservation of the stands of Boldcypress in Cypress Swamp and other parts of Sussex County. More recently, the organization has expanded its emphasis to the New Castle County and Kent County river and bay wetlands and the wetlands on Rehoboth Bay. The areas owned by Delaware Wildlands are open for public use with permission for nature study, hiking, riding, and hunting. These areas are of considerable value in meeting Delaware's outdoor recreation needs.

Additionally, over 21,000 acres are owned by private paper and pulpwood companies. Most of of these ownerships are located in Sussex County with the majority being the 11,000 acres owned by the Glatfelter Pulpwood Company, and almost 10,000 acres owned by Chesapeake Pulpwood Company. Most of these ownerships are located in southwestern Sussex County. The areas, according to the above companies, are open for hunting by permit, however, other uses are restricted due to the threat of fire and the lack of sanitary facilities. These areas are managed by professional foresters and are selectively cut and reforested to assure a sustained growth of marketable timber. Many smaller tracts are also known to be owned by lumber or timber interest, however, the exact number and extent of these ownerships could not be ascertained. These areas contribute to the State's outdoor recreation supply and provide valuable open spaces, however, their long-range value is seriously constrained by their commercial character.

TABLE 14

SUMMARY OF PRESENT OUTDOOR RECREATION LANDS
(Land & Water Areas in Acres)
July 1, 1969*

	Land	Water	Total
Private Sector			
New Castle County	2,800	N/A Separately	
Kent County	3,900	N/A Separately	
Sussex County	1,300	N/A Separately	
TOTAL	8,000	500	8,500
Public Sector - State			
Fish & Wildlife	15,838	2,895	18,733
Forests	6,365	-	6,365
Parks	6,044	208	6,252
Archives	95	-	95
Highway Rests	100	-	100
Public Education	5,188	-	5,188
TOTAL	33,630	3,103	36,733
Public Sector - Federal	25,080	270	25,350
Public Sector - New Castle County	2,203	23	2,226
Public Sector - Municipal			
New Castle County	1,002	6	1,008
Kent County	144	168	312
Sussex County	282	-	282
TOTAL	1,428	174	1,602
Total Public Sector	62,341	3,570	65,911
GRAND TOTAL	70,341	4,070	74,411

Source: 1967 Inventory, Outdoor Recreation for Delaware and subsequent updating of public ownerships to July 1, 1969.

* Private sector data is July 1967.

DEMAND

Demand for outdoor recreation is increasing at a rapid rate, often much in excess of the rate of growth in population. In witness of this demand, governments at all levels are beginning to recognize that their responsibilities include facilities for accommodating much of this demand just as they have been meeting the demand for social and health services.

Demand for any service is closely correlated to the major characteristics of our time. We are an increasingly urban nation whose citizens are enjoying the highest level of affluence ever achieved. We are also a very mobile nation, no longer content to remain at home, and in many cases no longer able to enjoy the outdoor in that crowded urban setting. The rapid urbanization of our landscape, increased family incomes, more leisure time due to the benefits of technological advances, mobility, and many other factors are contributing to the growing demand for outdoor recreation experiences.

All of these factors can be identified as they relate to Delaware and all of them compound the problem of proper planning for outdoor recreation as well as for every other land use or service. The proper distribution of always limited financial resources among the spectrum of demands requires that these factors and their relationship to the actual use of facilities be carefully explored.

Determination of the demand for outdoor recreation is further complicated. First, there is a serious lack of both techniques and statistics with which to approach the task, with the lack of the latter most critical. Creation and maintenance of useful statistics on participation in various outdoor recreation activities need continuing attention by administrators, operators, and planners of outdoor recreation facilities. Other complications include the difficulty in foreseeing new technologies which provide for previously impossible experiences, a limited understanding of the psychological aspects of recreation, and an even less clear understanding of the cause-effect relationships between the supply of a facility and the demand for it. Nevertheless, the use of present tools and careful insight are necessary to insure that the demands are met in accordance with the most efficient use of the State's natural resources.

This section of the plan provides an indication of the factors affecting outdoor recreation demand, the relationship over time of these factors and participation rates, and a projection of outdoor recreation demands for the State of Delaware. The section utilizes the relatively new concept of estimating demand based on social and economic characteristics of the residents in a specific study area. The factors affecting demand include population, income, education, occupation, household size, residence, mobility, and leisure. These are discussed in the following sections.

It should be noted that the data presented is for the entire state. Delaware is considered one planning region due to its size, the fact that all areas in the state are easily accessible from any others in less than two hours, and the fact that basic social and economic characteristics of the population are essentially similar throughout the state.

FACTORS INFLUENCING DEMAND

Population

The growth, distribution, age characteristics, and composition of the population are important elements affecting the future demand for outdoor recreation, especially in regard to specific activities.

As shown in Table 15 the 39 county study area utilized for data collection and analysis contains, not only, some of the fastest growing counties in the nation but, also, some major metropolitan areas suffering declines.

TABLE 15

REPRESENTATIVE GROWTH RATES STUDY AREA, 1950 - 1960

Metropolitan Center Area	Population Increase 1950-1960	Suburban County	Population Increase 1950-1960
Washington, D.C.	- 4.8%	Fairfax, Va.	+179%
		Montgomery, Md.	+107%
Philadelphia, Pa.	- 3.0%	Bucks, Pa.	+113%
Wilmington, Del.	-13.0%	New Castle, Del.	+ 95%

Source: 1960 U.S. Census of Population

The impact of this type of growth is a high level of demand for new recreational facilities in the suburbs and the problems of redistribution of wealth and the tax base associated with most metropolitan centers. In the first case the suburban county is faced with an overwhelming demand for all types of services while in the second case the metropolitan center in the face of an eroded tax base must meet the needs of the remaining residents, who need a considerable amount of recreational service as well as all other services. The problem in both cases is one of allocation of very limited resources to meet the demand.

Delaware, with the sixth fastest growth rate in the nation, experienced a population increase over the last 67 years from 184,735 in 1900 to 526,414 in 1967, according to the U.S. Census of Population. It is expected to increase to almost 590,000 in 1970 and could reach 835,000 by 1980. If present growth rates continue, a population of at least one million is possible by the end of the century. This growth, regardless of its composition, will undoubtedly result in the need for additional facilities if future residents of Delaware are to enjoy outdoor recreational experiences.

Age

Age is the single most important factor affecting outdoor recreation according to the ORRRC* with this factor directly affecting the present and the future type of activities demanded. Especially significant in regard to future demand is the relative age of the head of household. An area with relatively young family heads can expect higher future demands as the present younger population develops habits of participation due to their expanded leisure and affluence that would not have been developed by older segments of the population.

As can be seen from Table 16 the heads of households in Delaware tend to be younger than those in the region. Even more significant is the distribution of age within the State's population. A special census in 1967 indicated that more than 32 percent of the State's population is under fifteen years of age, the group participating heaviest in the use of playground areas. As shown in Table 17, approximately 42 percent of the population is between

* The abbreviation "ORRRC" will be used for the Commission throughout the plan. The Commission was an ad-hoc group established by congress in 1958. It is no longer in existence as it has completed its assignments.

TABLE 16

AGE OF HEAD OF HOUSEHOLD AS PERCENT OF TOTAL POPULATION, THE REGION & DELAWARE, 1960

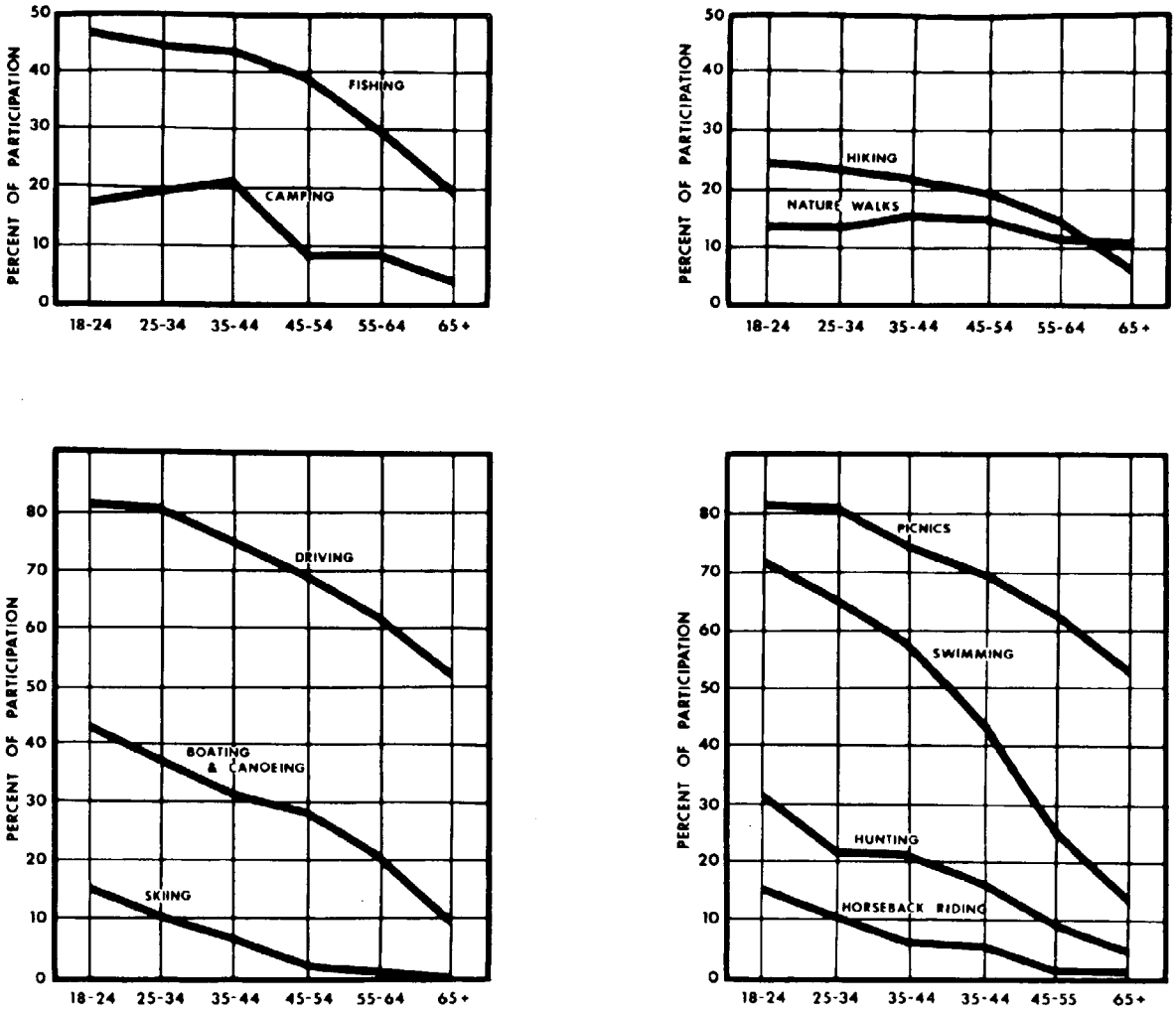
Age of Head of Household	Metropolitan Region	Delaware
0 - 24	6.4%	4.1%
25 - 34	22.8%	32.8%
35 - 44	26.1%	39.3%
45 - 54	19.5%	12.7%
55 - 64	16.8%	12.7%
65 - 74	7.5%	3.9%
75 - 84	.9%	.4%

Source: New Castle County Planning Commission, Population Background Study, 1966; Cole, Gerald Leon, Toward the Measurement of Demand...; U.S. Bureau of the Census, Population of Delaware, 1960.

fifteen and forty-five, the group that most actively participates in outdoor recreation activities. This young population means a major commitment is necessary for the provision of outdoor recreation facilities.

For most outdoor recreation pursuits, the age-to-participation relationship is progressive with each older group participating less than the preceeding younger group. This is especially true for the more strenuous activities, such as swimming, hiking, water skiing, and bicycling. Figure 16 indicates the composite participation and age relationships for some of the more popular recreational activities.

FIGURE 12
RELATIONSHIP OF AGE TO RECREATION PARTICIPATION



SOURCE: ORRRC STUDY REPORT #20

TABLE 17

DISTRIBUTION OF DELAWARE'S POPULATION BY AGE GROUP, 1967

	Delaware	Wilmington	New Castle	Kent	Sussex
0 - 4	52,205	7,573	36,011	8,573	7,621
5 - 14	115,220	16,202	80,316	18,434	16,470
15 - 19	45,796	7,111	32,307	6,912	6,577
20 - 44	172,829	23,134	119,275	30,272	23,282
45 - 64	99,678	20,375	71,582	11,711	16,385
65+	40,686	11,295	26,807	5,628	8,251
TOTAL	526,414	85,690	366,298	81,530	78,586
Median Age	26.6	32.4	27.0	23.9	29.0

Source: 1967 Special Census of Population

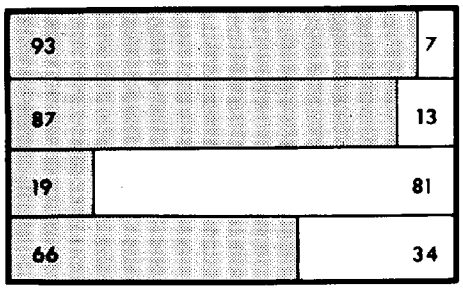
Residence

The distribution of the population in terms of its urban and rural character is also important as this factor affects both the type and location of the facilities demanded. As can be seen in Figure 13, the metropolitan portion of the State closely approximates the degree of urban development of the entire metropolitan region. This relationship, while tempered by the rural character of Southern Delaware, still holds for the State as a whole. Further, future development will make the State even more urbanized, as most of the projected growth is in or near the present urban areas. This trend is reflected in the location of outdoor recreation facilities since many of these facilities will need to be located relatively near the more urban development. The type of facility is also affected as, for example, the need for horseback riding areas is more critical in the urban area than in the rural portions, where more open lands are available. Much the same relationship holds for large land using activities such as hunting, nature study, hiking, and bicycling. From Figure 13, and from the projection of urban growth generated by the State's Comprehensive Development Plan, it is apparent that a major portion of the State's program for action must consider the urban resident.

FIGURE 13

URBAN AND RURAL RESIDENCE, 1960

AREA	POPULATION	%URBAN	%RURAL
METROPOLITAN REGION	8,426,079	93	7
METROPOLITAN DELAWARE	307,346	87	13
SOUTHERN DELAWARE	138,846	19	81
TOTAL DELAWARE	446,192	66	34



Education, Income, and Occupation

The ORRRC reports found that there is a correlation between educational achievement, income level, and occupation in regard to the demand for certain types of facilities and the degree of participation in various activities. Tables 18 and 19 indicate the educational achievement of Delawareans in the 1950-1960 decade and that of the residents of the metropolitan region of which Delaware is a part.

TABLE 18

EDUCATIONAL ATTAINMENT OF STUDY GROUPS

Educational Level Obtained		Metropolitan Region	Metropolitan Delaware	Southern Delaware
Elementary:	0 to 8 years	37.0%	37.8%	35%
High School:	1 to 4 years	44.5%	44.7%	54%
College:	1 to 3 years	8.4%	8.2%	7%
	4 yrs. or more	10.1%	9.3%	4%

Source: New Castle County Planning Commission, Population Background Study 1966; Cole, Gerald Leon, Toward the Measurement of Demand... U.S. Bureau of the Census, Population of Delaware, 1960

Delaware, with its rapid educational gains as witnessed by Table 19 could justify much of its recreational program on this factor alone.

TABLE 19

MEDIAN YEARS OF EDUCATION ATTAINED FOR PERSONS 25 YEARS OF AGE AND OLDER BY COLOR FOR WILMINGTON, BALANCE OF NEW CASTLE COUNTY, KENT COUNTY, AND SUSSEX COUNTY 1950 AND 1960

	Wilmington		Balance of New Castle County		Kent County		Sussex County	
Year	White	Non-White	White	Non-White	White	Non-White	White	Non-White
1950	10.2	7.8	9.3	5.2	9.4	7.0	9.0	6.2
1960	10.3	8.9	12.0	8.6	11.1	8.1	10.4	7.3

Source: C. Harold Brown and J. Keven O'Conner, Population of Delaware, Division of Urban Affairs, University of Delaware, January, 1965

Income is also a major factor affecting demand in that for most types of outdoor recreation activity participation was higher for persons of a higher income level. Table 20 indicates the relative position of Delaware's residents and those of the larger region in this regard.

TABLE 20

FAMILY INCOME LEVEL OF STUDY GROUPS, 1964

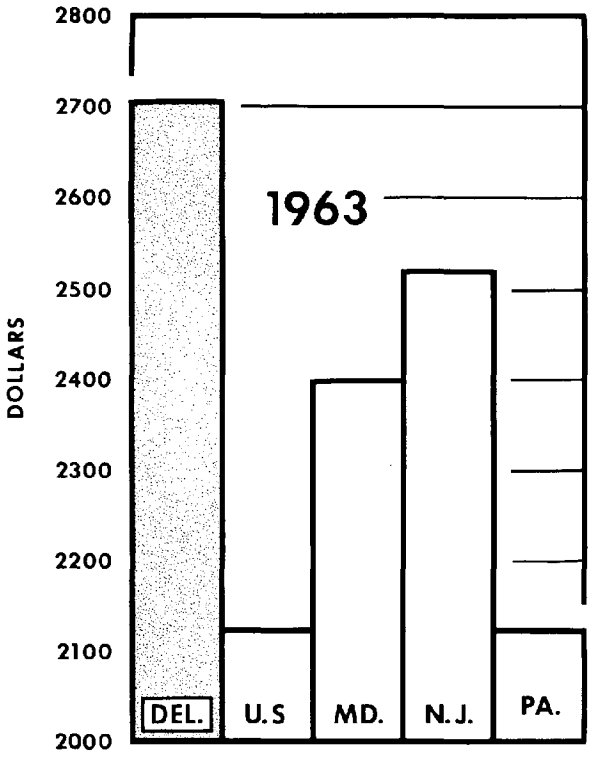
Level of Income	Metropolitan Region	Metropolitan Delaware	Southern Delaware
Under $3,000	10.3%	12.5%	26%
$3,000 to $9,999	72.1%	66.4%	63%
$10,000 and Over	17.6%	21.0%	11%

Source: New Castle County Planning Commission, Population Background Study, 1966; Cole, Gerald Leon, Toward the Measurement of Demand, U.S. Bureau of the Census, Population of Delaware, 1960

The U.S. Bureau of the Census estimated Delaware's per capita personal income at $3,271 in 1964, the highest of any state in the nation and second only to the District of Columbia. Forecasts of the per capita income indicate a steady rise to over $3,900 by 1980. The United States' average in 1963 was $2,448. As indicated in the Comprehensive Development Plan, the per capita disposable income in Delaware compares very favorably with that in the nation and with that of the State's neighbors. In 1963, this indicator stood at $2,683 compared with a national average of $2,122 to place Delaware second highest in the nation. If increasing income affects participation as indicated by the ORRRC studies, this factor implies a great demand in Delaware.

FIGURE 14

PER CAPITA DISPOSABLE INCOME DELAWARE, UNITED STATES AND NEARBY STATES



Source: Regional Economic Relationships of Delaware, Division of Urban Affairs, U. of Del.

Occupation was also found to have an effect on participation and demand. The ORRRC studies indicate that going up the occupational hierarchy from unskilled to professional categories, the participation rate, for men at least, also increases. Table 21 indicates the occupational distribution of Delaware workers. This factor also implies a rapid increase in the demand for outdoor recreational facilities.

TABLE 21

PERCENT OF EMPLOYED LABOR FORCE BY OCCUPATIONAL CATEGORY
FOR WILMINGTON, COUNTIES AND STATE OF DELAWARE, 1960

Occupational Category	Wilmington	New Castle County	Kent County	Sussex County	State
Professional & Technical	10.9%	18.5%	8.9%	6.9%	15.4%
Managers, Officials	9.3%	10.5%	11.2%	11.4%	10.7%
Clerical and Sales	15.1%	14.7%	12.4%	10.3%	13.7%
Craftsmen and Foremen	22.0%	24.2%	22.2%	19.8%	23.2%
Operative	22.3%	18.7%	15.4%	21.4%	18.8%
Service Workers	10.1%	5.9%	5.3%	3.7%	5.5%
Laborers	10.1%	5.6%	9.2%	7.0%	6.3%
Other	0.2%	1.9%	15.4%	19.5%	6.4%

Source: Brown and O'Conner, University of Delaware

TABLE 22

WHITE, BLUE COLLAR WORKERS AS A PERCENT OF TOTAL POPULATION, 1960

Area	White Collar	Blue Collar
Metropolitan Region	13.2%	26.9%
Metropolitan Delaware	19.6%	16.2%
Southern Delaware	11.2%	19.3%

Source: New Castle County Planning Commission, Population Background Study, 1966; Cole, Gerald Leon, Toward the Measurement of Demand ... U.S. Bureau of the Census, Population of Delaware, 1960

Household Size

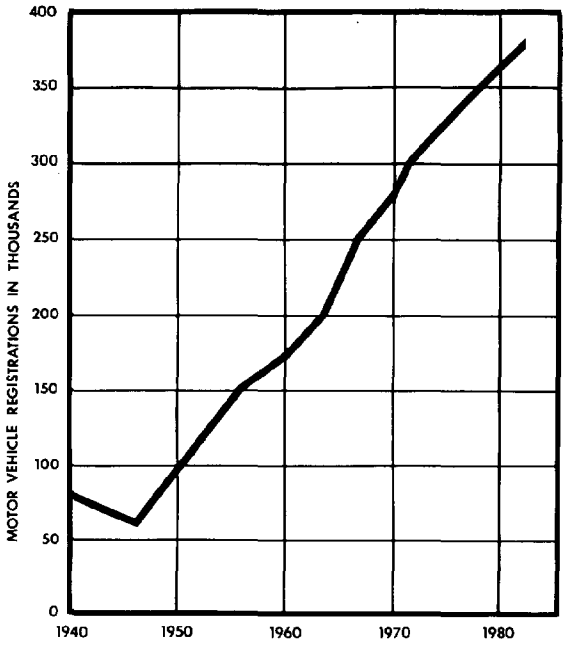
Household size affects demand for outdoor recreation, largely because it often is related to income. Also, it tends to limit the mobility of the family. Studies have shown that central-city, non-white residents and suburban-white residents tend to have relatively high fertility rates. These two groups tend to have more children and at an earlier age than most residents in other parts of the region. The tables and graph in preceding sections show that the State is approaching the urban rural character of the region as a whole. The impact of this factor on demand is largely locational, affecting those facilities which appeal to family groups and in which demand is directly related to the family's mobility.

Mobility

Mobility of the population is a recognized trend throughout the nation and the State. Contributing to this mobility are the interstate highways (I-95, I-495, and I-295, which pass through Delaware), the beltways around Washington D.C. and Baltimore, and improved highways leading to the resort areas (i.e., U.S. 40, U.S. 50-301, U.S. 13, and Delaware 14). Consequently, no portion of the study area is beyond a two to three hour drive of Delaware's outdoor recreation opportunities. Within the State some 4,294 miles of State maintained roads provide access to every conceivable resource location. The State is part of a major trend corridor along the Eastern Seaboard as it is linked by expressways, bridges, bridge-tunnels, and ferry service to the major urban centers from Richmond, Virginia to New York City. The result of this corridor location is conducive to heavy travel through the State, much of its for recreational purposes. Therefore, it is expected that the most accessible facilities will be heavily utilized. Proper design and control of the use of these facilities will be essential to prevent the loss of their natural character.

Another indication of the mobility of the Delaware population can be seen in Figure 15 Motor Vehicle Registrations.

FIGURE 15



DELAWARE MOTOR VEHICLE REGISTRATION

SOURCE: MOTOR VEHICLE DIVISION, DELAWARE STATE HIGHWAY DEPARTMENT

As can be seen from analysis of this factor, Delaware will feel the impact of the mobile population and, therefore, must be prepared for the resulting outdoor recreational demand.

Leisure

Although precise information as to the amount of leisure time for Delawareans is not available, it is known that in general, the State's population is enjoying a shorter work week than ever before. Today most Delawareans enjoy a work day of eight hours or less. However, it should be noted that there are many factors vying for the average Delawarean's leisure time. Much of his leisure time is not available for outdoor recreation activity. Many Delawareans today live in suburbia or have lots in the city and are faced with long hours of yardwork -- spring, summer, and fall to maintain the attractiveness of their premises. In addition to these functions, there are many active community and service organizations in Delaware, all of which require a great deal of their members' time.

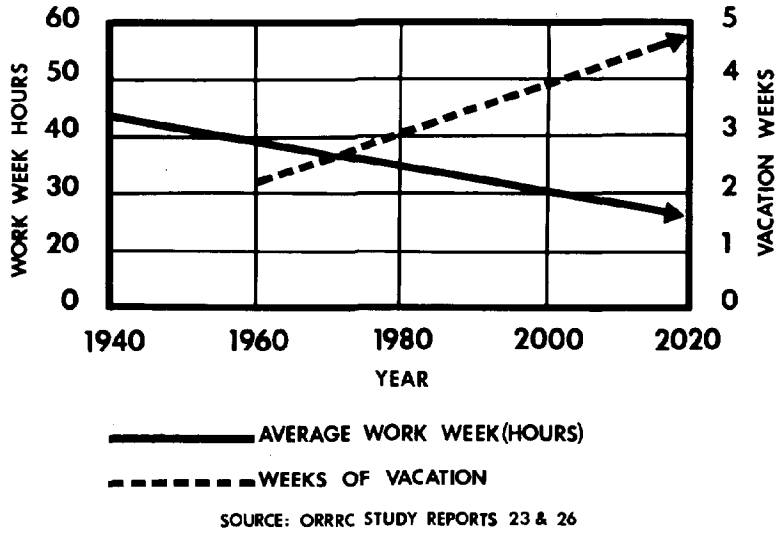
Nevertheless, the increases in leisure time that can be expected are dramatic. According to the ORRRC, "By 1976, it is estimated that the standard scheduled work week will average 36 hours for the entire industrial work force versus 39 hours in 1960. And by 2000 it may be down to 32 hours." ORRRC also indicated that the work week may decrease to about 31 hours by the year 2000 in the Middle Atlantic States, while paid vacations will increase from 2.3 weeks to almost 4 weeks by 2000. Figure 16 graphically displays these trends.

The shorter work day will allow more time for activities such as picnicking, pleasure walking, and active play which are user location oriented, while longer vacations will increase the amount of participation possible in activities which demand travel to the recreational resource.

Other factors affecting demand include promotional or state-wide advertising policies and improvements to transportation systems. These two factors will be discussed in another section of this report.

FIGURE 16

LEISURE TIME



SOURCE: ORRRC STUDY REPORTS 23 & 26

It is assumed that the full range of an individual's actions are determined by his choice of one of many alternative actions. This does not mean that the individual has an absolute free choice, but rather that he has a free choice of the alternatives which are accessible to him. Therefore, every individual has constraints placed on him because of his social or economic position in life. Certain forms of outdoor recreation appeal to one person or group of people, while another person or group may be deprived of desired recreation because of social or economic restraints.

DETERMINATION OF SOCIO-ECONOMIC VARIABLE AND PARTICIPATION

In line with recent efforts by the Outdoor Recreation Resources Review Commission (ORRRC) and others to improve the validity of demand forecasts, emphasis has been directed to the determination of specific recreation preferences and the interrelationship of various social and economic factors upon demand.

The study area chosen for determination of appropriate socio-economic factors includes 39 counties in the Washington, D.C. - Baltimore, Maryland-Philadelphia, Pennsylvania Metropolitan Region. The area, the survey, and regression analyses that produced the rates used in this report are based on work undertaken by Gerald L. Cole for a doctoral thesis. The area was chosen because it had the characteristics cited in recent literature as contributing to the growth in demand for outdoor recreation. Furthermore, as shown later in this section, this area and the metropolitan portion of Delaware (New Castle County) have similar growth patterns and socio-economic characteristics. According to studies by the Outdoor Recreation Resources Review Commission, the factors affecting the demand include increasing population, increasing income, increasing access and mobility, and increasing leisure time.

This 39 county study are was analyzed by Gerald L. Cole while a doctoral candidate in the Department of Agriculture Economics of the Michigan State University. This study was based upon a mail survey of some 2000 families in the metropolitan region. The questionnaire included requests for information on participation in outdoor recreation activities as well as data on the socio-economic characteristics of the respondent. The resulting responses were tabulated and multiple regression analysis was used to derive both the participation rates and their relationship to the various socio-economic demand factors. Dr. Cole's analysis and findings provided the framework for projecting future demands for the 21 activities listed in Table 23.

As can be seen in Table 23, the greatest participation was greatest in those activities requiring relatively little investment, while those requiring more monitary outlay such as golfing, hunting, camping, and skiing had a very low percent of participation.

The ocean has a strong attraction as shown by the 50 percent of the households that participated in swimming. Furthermore, the increasing mobility of the population is readily apparent by the examination of participation rates for pleasure rides, vacation and weekend trips, and those activities necessitating a trip prior to enjoyment of outdoor recreation.

TABLE 23

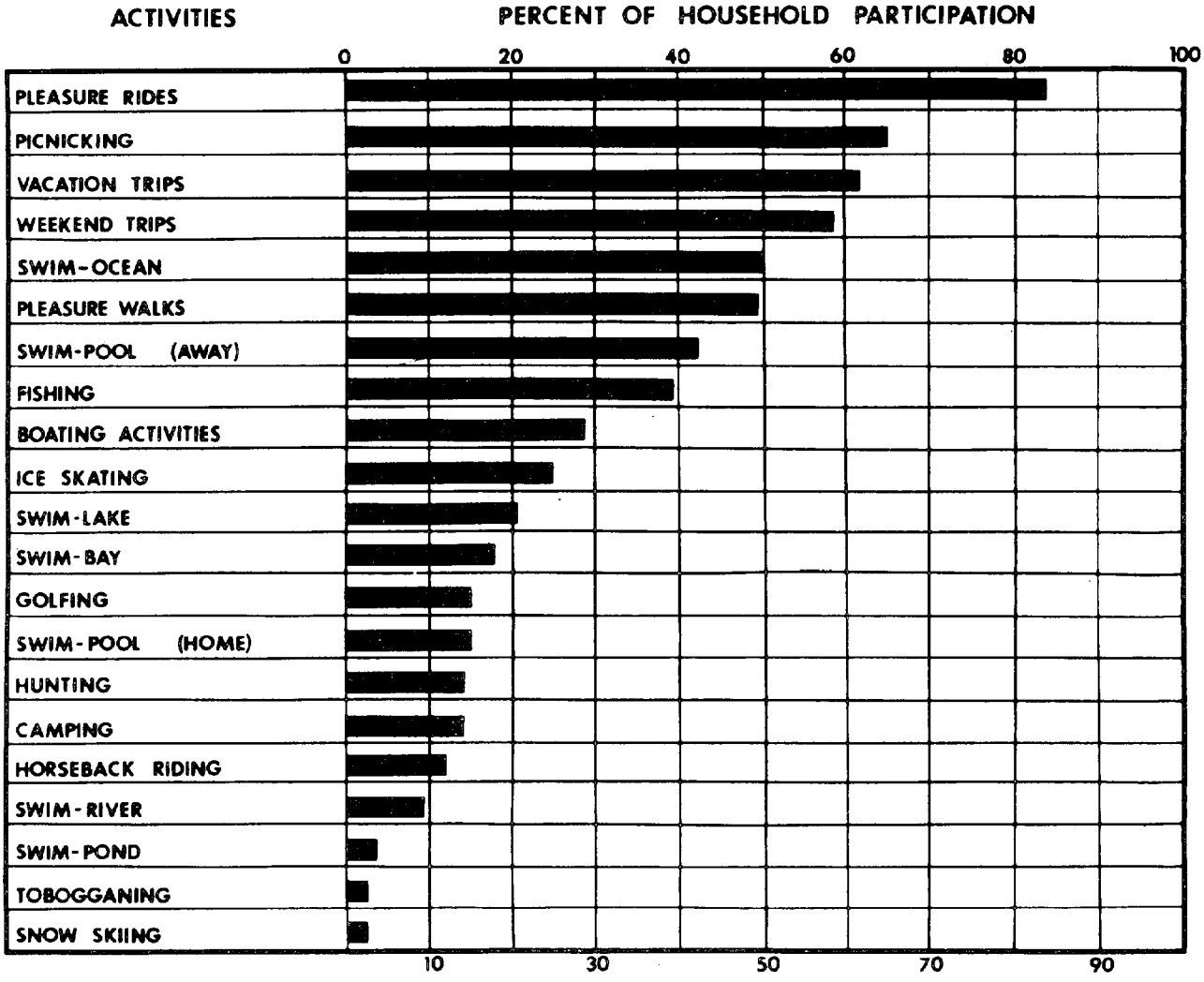
NUMBER AND PERCENT OF HOUSEHOLDS PARTICIPATING BY OUTDOOR RECREATION ACTIVITY WITH AVERAGE FREQUENCY OF PARTICIPATION PER HOUSEHOLD IN ONE YEAR PERIOD, 1963-64

Activity	(a) No. of Households participating (of those responding)	(b) % of Households participating (of those responding)		(c) Average Frequency of Participation Per Household	(d) Per Participating Household
Pleasure rides	1,447	84		23.02	27.33
Picnicking	1,114	65		3.74	5.77
Swim-ocean	866	50	-Head	2.54	7.14
			Homemaker	2.66	13.87
			Children	2.04	5.47
Pleasure Walks	840	49		15.02	30.72
Swim pool away from home	735	43	-Head	1.99	8.90
			Homemaker	2.98	12.52
			Children	7.73	21.08
Fishing	669	39		4.67	11.99
Boating activities	490	28		3.13	10.97
Ice skating	429	25		1.92	7.69
Swim-lake	367	21	-Head	.83	6.37
			Homemaker	1.05	7.98
			Children	1.83	10.11
Swim-bay	290	17	-Head	.65	6.07
			Homemaker	.83	7.71
			Children	1.18	8.59
Golfing	265	15		3.28	21.26
Swim pool at home	250	15	-Head	1.03	16.29
			Homemaker	1.59	22.95
			Children	4.67	35.82
Hunting	248	14		1.58	10.94
Camping	242	14		.43	3.08
Horseback riding	201	12		1.40	11.97
Swim-river	156	9	-Head	.38	4.14
			Homemaker	.36	3.92
			Children	.84	9.28
Swim-pond	63	4	- Head	.20	5.48
			Homemaker	.19	5.18
			Children	.39	10.58
Tobogganing	57	3		.21	6.33
Snow skiing	53	3		.22	7.04
Vacation trips	1,069	62		.97	1.56
Weekend trips	996	58		2.53	4.36
Total Sample	2,000				
Households Responding	1,718				

Source: Gerald L. Cole, Toward the Measurement of Demand for Outdoor Recreation in Philadelphia, Washington, and Baltimore Region, P. 50.

FIGURE 17

PERCENT OF HOUSEHOLDS PARTICIPATING IN VARIOUS OUTDOOR RECREATION ACTIVITIES



Participation rates are lowest for those activities requiring particular natural resources which are limited in the Region. Although many of these activities show a relatively low participation rate, and many are not statistically accurate in the strictest sense of the requirements of a "multiple regression" analysis, some relationships are identifiable and have great merit in the projection of outdoor recreation demand.

According to Cole,[3] the following variables and relationships are realized:

Time and Distance

> When participation is related to distance to the site and travel time, two patterns emerged. For activities such as pleasure rides, bay and ocean swimming, boating, camping, vacation and weekend trips, the participation is positively related to distance and time. These activities, largely resource-oriented, exist near the centers of population, hence a short trip may be necessary. Potential participants either expend the time and travel the distance or they do not; there is virtually no partial participation.

A second group of activities, such as fishing, picnicking, pleasure walking, pool swimming, ice skating, golfing, hunting, horseback riding, tobogganing, and skiing possess a negative time distance relationship factor. This means that according to Cole, user-oriented participation in activities is such that few users will be attracted from a great distance. However, it should be noted that the actual time expended per mile travelled is proportionately higher for these user-oriented activities than the resource-oriented activities, this being due to the fact of the more congested nature of the urban areas in which most users reside.

Socio-Economic Variables

According to Cole's analysis the following relationships are noted:[4]

> "Participation in picnicking, swimming, ice skating, vacation and weekend trips is less likely where physical handicaps are present among household members. Urban residents are more likely to take walks than are farm residents. Farm residents are more likely to participate in hunting than are urban residents. This agrees with the findings of the ORRRC studies . . . Participation in swimming, pleasure rides, picnicking, and hunting is less likely as age increases. No significant relationship was found between age and participation in walking, fishing, boating, golfing, and camping. In those activities where participation is a decreasing function of age, the opposite relationship is true between participation and household size since age and household size are inversely related. In addition, participation in walking, fishing, and camping is an increasing function of household size.
>
> Non-whites are less likely to participate in swimming, golfing, and ice skating, while no significant relationship was found between race and participation in other activities.
>
> Participation in pleasure rides, picnicking, fishing, golfing, and hunting was found to be more likely as the level of education increases. As the level of income increases, participation is more likely for pleasure rides, ocean and pool swimming, walking, boating, ice skating, golfing, horseback riding, tobogganing, skiing, and vacation and weekend trips. Participation decreases as income increases in the case of picnicking, fishing, bay swimming, and camping. The ORRRC studies found camping participation to be positively associated with income.

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[3] Cole, P. 74

[4] Cole, P. 77

Participation in boating and hunting is likely to be more frequent among blue collar workers than among professional and technical persons, while participation in swimming at pools and weekend trips is more likely among professional and technical workers than among blue collar workers. For other activities there was no significant relationship found between participation and occupation."

It should be noted that Dr. Cole's study does not fully cover the range of outdoor recreation activities. It omits bicycling, sightseeing (except as part of pleasure rides or vacation trips), attending outdoor sports events, nature walks, water skiing, hiking, or attending outdoor concerts and plays. Since participation data for these is not available they cannot be projected, however, it is recognized that they are important activities in park development and will be allowed for in park concept plans.

Transportation Patterns and Facilities

As noted earlier, other factors affecting demand include the transportation patterns. Generally, the results of an origin-destination (O and D) are utilized to gain an indication of the purpose of a specific trip. Conversely, the plotting of the origin and destination of the trip produce "desire lines." These in turn result in an identification of potential transportation needs.

The findings of an external survey conducted by the Delaware State Highway Department in cooperation with the Delaware State Planning Office in 1966 have been tabulated in terms of trip purpose and total number of visitors. The number of visitors is specifically important as this figure must be added to Delaware's demand in order to accurately project the total demand for outdoor recreation in the State.

The 1966 Origin and Destination survey determined that on an average weekday a total of 678 vehicles entered Kent and Sussex Counties from out-of-state for recreational purposes. This count, however, does not accurately reflect the total number of visitors since it does not account for weekend day visitors. Therefore, some modification is necessary.

In order to adjust the visitors factor, two assumptions have been made. The first assumption is that visitors to Kent and Sussex Counties account for essentially all non-resident recreation trips in the State, for this area is the location of most of the outdoor recreation resources for activities which are not user location oriented.

The second assumption is that a factor of three applied to the average daily weekday trips would result in a modified average daily trip figure which reflects the peak demand of a weekend day. Applying this factor yields a modified average daily number of trips equaling 2,034.

Assuming further that each vehicle has 4.5 occupants, as was found to be the average in the 1966 survey, the average daily number of visitors for recreation purposes is computed as approximately 9,000. It should be noted that this figure is for an average summer season day since Delaware does not have the resources which would result in a large number of visitors for winter season outdoor recreation activities.

The number of recreation visitors to Delaware has been projected for the years 1980 and 2000, based on population projections for the region obtained from the U.S. Department of Commerce. These projections will be discussed more fully in a later section of this report.

TABLE 24

ASSUMED AND PROJECTED DAILY
RECREATION VISITORS TO DELAWARE
(Average Summer Day)

Year	No. of Recreation Trips	No. of** Visitors/Day
1966*	2,034	9,000
1980	3,044	12,700
2000	4,000	18,000

* Modified O and D average daily weekday trips to account for weekend day trips by non-residents for recreation purposes.

** These projections correlate well with the record of out-of-state visitors compiled by the Division of Parks, Recreation and Forestry. For example, on June 30, 1968 a total of 1,376 out-of-state vehicles (or approximately 5,500 visitors) were counted. In 1969, an average of three summer days indicated some 7,900 out-of-state visitors.

Promotion Factors and Relationships

The impact of promotion or advertising activities on participation in outdoor recreation in Delaware is difficult to measure, although some indications can be gathered from the various "User Surveys."

For the purposes of this report, the present impact is relatively less significant than is the understanding of the potential impact of a different promotional approach. Presently, the State operates under a policy of promotion largely within the State and the nearby region through its participation in most "Travel and Vacation" shows throughout the metropolitan region. Also, the Economic Development Division answers numerous requests from out-of-state inquirors and conducts a wide range of travel promotion activities.

In addition, it should be noted that certain facilities, especially the ocean beaches, are promoted by private sources such as realtors, developers, and local chambers of commerce.

Based on local attitudes and the findings of the vacation home survey, it sppears that the present promotional approach is popular. As was shown in the planning programs for Bethany Beach and Lewes (both resort-oriented communities), many local residents have expressed a desire to avoid the over-development, over-commercialization typical of other similar resort areas. This opinion is also held by vacationers who indicated that they chose the area due to its relative non-commercialization.

From the standpoint of predicting demand one must assume that the present type and level of promotion will continue - or that the State will undertake a major campaign to "bring in" out-of-state users for some of its outdoor recreation facilities.

If the policy is changed and directed toward more promotion, the projections made here will be inaccurate and considerably low. It is essential that policy makers also realize that additional visitors, while adding to the local economy, are not doing so without additional cost. As with all commodities, there must be a "trade-off." More people mean less space per person; more travelers mean less efficiency on road networks, etc. The important point, therefore, is that at some point the increment to the economy is more than offset by the cost in terms of additional land needs, increased maintenance, or loss in asthetics or efficiency of the facility.

Should the promotional policy be changed, as is suggested by the policies of this plan, the level of such promotion must be carefully related to the outdoor recreation concepts desired and the ability of Delaware residents to bear the cost required. Especially critical is the advisability of promoting the resources which are highly promoted by private interests when many other resources owned and developed by the State are not receiving the benefit of such promotion.

USER STUDIES

As noted in the Inventory Section, surveys were conducted by the State Planning Office to gain information on the trends, specific uses, needs, and desires of persons using Delaware's outdoor recreation facilities.

Most of the findings of these studies tend to reinforce the assumption that Delaware residents and visitors have recreation characteristics similar to residents of the metropolitan region. Additional fundings tend to promote a further breakdown within a recreation category (such as boating). It is the latter that holds significance for this project. In the plan portion of the project, especially that part covering facility design, the specific types of uses and the suggested improvements must be considered. These surveys give insight into such factors as aesthetics, reasons for selecting a specific site and vacation home ownership patterns. By careful review of the results of these surveys, it is hoped that facilities developed to meet future demand will reflect and be tempered by "user" desires.

PROJECTED DEMAND FOR OUTDOOR RECREATION IN DELAWARE

Methodology

The projections published in this chapter are based upon the report, The Economic Base of Selected Geographic Areas, Historical and Projected 1929 to 2020 published in 1968 by the U.S. Department of Commerce.

The projection of demand for Delaware and the metropolitan region uses the following methodology:

1. Projected populations of Delaware and the surrounding metropolitan region for the year 2000 are derived from the previously mentioned U.S. Department of Commerce report.

2. The average daily number of visitors (out-of-state residents) is determined from the Origin-Destination data (and correlated with the out of state visitor count required by BOR) and is then added to the projected Delaware population. This yields a total participation potential.

3. The per capita participation from Cole's study is multiplied by the projected population to indicate the number of user days in the region and State.

4. These resultant numbers are then tempered by the projected socio-economic conditions of the study areas.

5. The adjusted user days are then assigned a number of peak days per season of participation. Division of the total user days by the assumed number of peak participation days yields the peak day average number of users by specific outdoor recreation activity to be accommodated in Delaware by the year 2000. This final figure will, therefore, be the real projected demand. This figure is reported in the needs section of the study as peak day demand is most closely related to existing capacities and deficiencies.

The following sections are based upon the five stages mentioned in the methodology.

Population Projections

The population for the metropolitan region has been projected by the Water Resources Council publication, Preliminary Report on Economic Projection for Selected Geographic Areas 1929-2020. The figures from the economic areas "01016," Philadelphia-Trenton-Wilmington and "01018," Washington-Baltimore are combined to give the population for the metropolitan region.

Regional Population - 2000 A. D.

Some questions could be raised because the study area of Cole's thesis does not exactly duplicate the economic regions from the Department of Commerce. However, the slight overlap of study areas is not detrimental to the study since the fringe counties will be increasingly urbanized during the plan period, and Cole's study area is representative of the metropolitan region as it is today, while the Department of Commerce's economic region is representative of the metropolitan region by the year 2000. Based on the Department of Commerce projections, the population for the Philadelphia-Baltimore-Washington metropolitan region in 2000 is determined to be 19,731,100 persons.

Delaware Population - 2000 A. D.

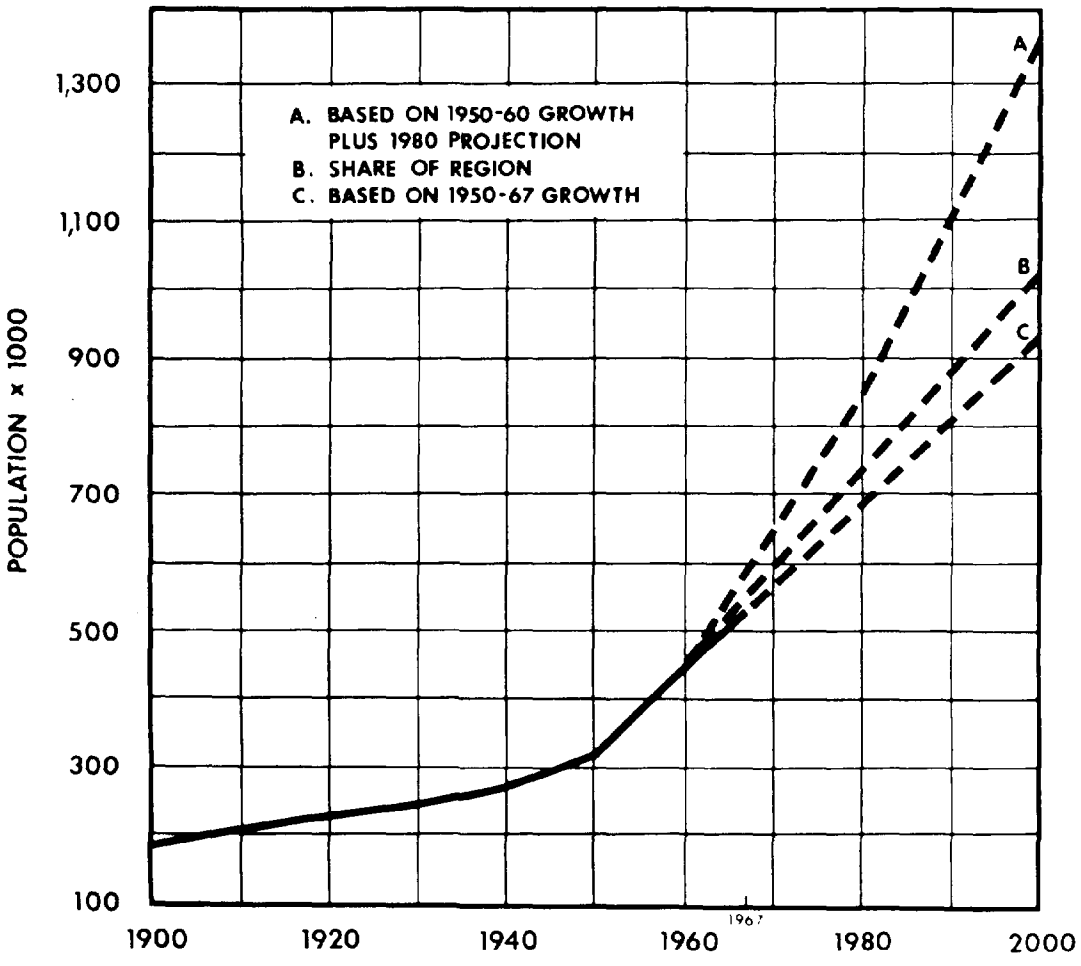
In order to project demand for the year 2000, it is necessary to develop a reasonable estimate of the State's population in that year. While many very sophisticated techniques are available for this purpose, these are outside the scope of this outdoor recreation plan. Nevertheless, a projection is necessary and this report examined two techniques, share of the region and trend projection, in order to arrive at the 2000 population.

The former approach assumes that Delaware's population will retain a similar proportion of the region's future population (e.g. 5.8%). Using this approach, Delaware's 2000 population would approximate 1,040,000 persons.

The other approach determines the past growth rate and projects that rate based on a trend line plotted through the points of record. This technique has been applied twice since a 1980 population projection of 715,000 was developed in the initial updating efforts for the State's Comprehensive Development Plan and since a 1967 special census was also available. The results of plotting in the first case would yield a population of approximately 1,200,000 while in the second case a projection of approximately 950,000 is obtained. The great divergence between these projections is due to the considerably slower growth rate of the State in the 1960-1967 period as compared with that of the 1950-1967 period. (See Figure 18)

FIGURE 18

COMPARATIVE POPULATION PROJECTIONS STATE OF DELAWARE



As two of the approaches approximate 1,000,000 persons in the year 2000 and given the apparent slowdown in the growth rate of the 1960-1967 period, this section will utilize a population of 1,000,000 for projection of the year 2000 demand. The recently established 1980 projection of 715,000 will be retained for consistency with other planning programs. When the 1970 census data becomes available, both the 1980 and 2000 projections should be reviewed and subsequent updatings of the outdoor recreation plan will reflect any necessary adjustments. The 1980 population and demand projections will serve to outline the necessary outdoor recreation actions that must be undertaken in the near future while the 2000 projection will outline the actions necessary in the long range. With increasing urbanization a way of life, a response is needed now in order to serve the future population regardless of whether the exact population projection is reached in 1980 or 1982, or in 2000 or 2002.

POTENTIAL DEMAND, CALCULATION OF USER DAYS

A user day, for the purposes of this study, is simply a way of expressing the aggregate of the total participation in a specific activity during a year based upon the number of potential participants and the annual number of times (frequency) such participation is desired.

The number of user days is calculated for each activity prevalent in Delaware by multiplying the participation frequency (column C) from Table 23 by the projected population.[6]

> . . . These rates are considered as per capita rates except where evidence from the study indicated that all members of the household did not participate in an activity. Adjustments were made in the participation rates for the following activities: hunting, horseback riding, fishing, ice skating, and golfing. The first four participation factors were divided by two because primarily children, or in the case of hunting, heads of households and children participate. For golfing, the rate was divided by three because primarily only heads participate with children or other household members on rare occasions.

Tables 25 and 26 indicate the "User Days" by specific activity for Delaware residents, for out-of-state in Delaware, and total participants in Delaware's outdoor recreation areas for the years 1980 and 2000 based on present per capita participation rates.

The method of calculation for this projection is as follows:

Per Capita Participation Rate X Population = User Days

This calculation is done for Delaware population and visitor population and the two results are added to get total user days.

As can be seen from the preceding tables, the projections indicate that over one-half of the total user days will be comprised of pleasure rides and walks. Swimming of all types is the third most important activity with swimming at the ocean and in pools away from home being most popular.

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[5] An original 1980 estimate of 834,000 from the Development Plan was substantially reduced after preparation of an Age-cohort projection for 1970, 1975, and 1980 during December 1969.

[6] Cole, P. 79.

TABLE 25

PROJECTED USER DAYS FOR OUTDOOR RECREATION ACTIVITIES, DELAWARE RESIDENTS, NON-RESIDENT VISITORS AND TOTAL USERS, YEAR 1980

Activity	Per Capita Frequency of Participation	Delaware Resident User Days (In Thousands)	Non-Resident Visitor User Days (In Thousands)	Total User Days in Delaware (In Thousands)
Pleasure Rides	23.02	16,459	300	16,759
Picnicking	3.74	2,674	50	2,724
Swim-Ocean				
Head	2.54	1,816	35	1,851
Homemaker	2.66	1,902	35	1,937
Children	2.04	1,459	30	1,489
Pleasure Walks	15.02	10,739	195	10,934
Swim-Pool (Not at Home)				
Head	1.99	1,423	25	1,448
Homemaker	2.98	2,130	40	2,170
Children	7.73	5,527	100	5,627
Fishing[2]	2.34	1,673	35	1,708
Boating activities	3.13	2,238	40	2,278
Ice Skating[2]	.96	686	*	686
Swim-Lake				
Head	.83	593	10	603
Homemaker	1.05	750	15	765
Children	1.83	1,308	25	1,333
Swim-Bay				
Head	.65	465	10	475
Homemaker	.83	593	10	603
Children	1.18	844	15	859
Golfing[3]	1.09	779	15	794
Swim-Pool (at Home)				
Head	1.03	736	*	736
Homemaker	1.59	1,137	*	1,137
Children	4.67	3,339	*	3,339
Hunting[2]	.79	565	10	575
Camping	.43	307	5	312
Horseback Riding[2]	.70	504	7	511
Swim-River				
Head	.38	272	5	277
Homemaker	.36	257	5	262
Children	.84	601	10	611
Swim-Pond				
Head	.20	143	4	147
Homemaker	.19	136	5	141
Children	.39	278	5	283

TABLE 25 (continued)

Activity	Per Capita Frequency of Participation	Delaware Resident User Days (In Thousands)	Non-Resident Visitor User Days (In Thousands)	Total User Days in Delaware (In Thousands)
Tobogganing	.21	150	*	150
Snow Skiing	.21	150	*	150
Vacation Trips	.22	3,288	60	3,348
Weekend Trips	5.06	3,618	65	3,683

Delaware Population, 1980 - 835,000
Non-Resident Visitors, 1980 - 13,000 average per day

* Not calculated for visitors due to insufficiency of Delaware resources for these winter activities

[1] Source: Cole, P. 50 - factored according to study findings
[2] Frequencies divided by 2 (see text)
[3] Frequency divided by 3 (see text)
[4] Frequency multiplied by 4.75 days (average trip length from survey)
[5] Frequency multiplied by 2.00 days in weekend

TABLE 26

PROJECTED USER DAYS FOR OUTDOOR RECREATION ACTIVITIES,
DELAWARE RESIDENTS, NON-RESIDENT VISITORS AND TOTAL USERS, YEAR 2000

Activity	Per Capita Frequency of Participation	Delaware Resident User Days (In Thousands)	Non-Resident Visitor User Days (In Thousands)	Total User Days in Delaware (In Thousands)
Pleasure Rides	23.02	23,020	405	23,425
Picnicking	3.74	3,740	65	3,805
Swim-Ocean				
Head	2.54	2,540	55	2,595
Homemaker	2.66	2,660	50	2,710
Children	2.04	2,040	35	2,075
Pleasure Walks	15.02	15,020	270	15,290
Swim-Pool (Not at Home)				
Head	1.99	1,990	35	2,025
Homemaker	2.98	2,980	55	3,035
Children	7.73	7,730	140	7,870

TABLE 26 (continued)

Activity	Per Capita Frequency of Participation	Delaware Resident User Days (In Thousands)	Non-Resident Visitor User Days (In Thousands)	Total User Days in Delaware (In Thousands)
Fishing[2]	2.34	2,340	40	2,380
Boating Activities	3.13	3,130	55	3,185
Ice Skating[2]	.96	960	(6)	960
Swim-Lake				
Head	.83	830	15	845
Homemaker	1.05	1,050	20	1,070
Children	1.83	1,830	30	1,860
Swim-Bay				
Head	.65	650	10	660
Homemaker	.83	830	15	845
Children	1.18	1,180	20	1,200
Golfing[3]	1.09	1,090	20	1,110
Swim-Pool (at Home)				
Head	1.03	1,030	(7)	1,030
Homemaker	1.59	1,590	(7)	1,590
Children	4.67	4,670	(7)	4,670
Hunting[2]	.79	790	15	805
Camping	.43	430	5	435
Horseback Riding[2]	.70	700	15	715
Swim-River				
Head	.38	380	5	385
Homemaker	.36	360	5	365
Children	.39	390	5	395
Tobogganing	.21	210	(6)	210
Snow Skiing	.22	220	(6)	220
Vacation Trips[4]	4.61	4,610	85	4,695
Weekend Trips[5]	5.06	5,060	90	5,150
Swim-Pond				
Head	.20	200	5	205
Homemaker	.19	190	5	195
Children	.39	390	5	395

Notes:

Delaware Population, 2,000 - 1,000,000
Non-Resident Visitors, 2,000 - 18,000 per day average

(1) Source: Cole, P. 50 - factored according to study findings
(2) Frequencies divided by 2 (see text)
(3) Frequency divided by 3 (see text)
(4) Frequency multiplied by 4.75 days (average trip length from survey)
(5) Frequency multiplied by 2.00 days in weekend
(6) These categories discounted for visitors as Delaware does not offer natural resources for which such use would be significant
(7) Swim-pool at home by its definition discounts any visitor participation

The three most popular activities comprise nearly 76% of the total user days of participation of the remaining activities, vacation trips and weekend trips are most popular, followed by boating, fishing, and picnicking.

The same findings are assumed for non-residents except that certain activities are not evaluated since they could not be satisfied by resources in Delaware. These activities are ice skating, snow skiing, and tobogganing. Also deleted is the activity of swimming in a pool at home as the definition of this category automatically eliminates visitors.

These calculations express potential demand expressed in current participation rates. The next section discusses the adjustments necessary to accommodate future participation rates.

SOCIO-ECONOMIC ADJUSTMENT

Since the preceding user day projections are based upon current participation rates, they may not accurately predict future rates given certain trends in socio-economic conditions. In accordance with the findings of ORRRC Study No. 26, Prospective Demand for Outdoor Recreation, the aggregate effects of changes in the composition of the population in regard to income, education, occupation, residence, age, and leisure must be considered in regard to the participation frequencies. The composite of these functions and the underlying assumptions from ORRRC are presented below.

Specific Changes:

Urban-Rural Residence

The Bureau of Outdoor Recreation estimates that forty years hence urban areas are expected to include 70 percent of all persons (U.S. citizens) and rural areas 30 percent.

In the Philadelphia to Washington study region the increased urban residency will mean that the numbers of rural residences will be statistically insignificant when compared to the numbers of urban residents. Activities which are depressed most by the anticipated change in this factor are those often or usually pursued in rural environments -- hunting, horseback riding, and fishing. There will be an increase in the activities -- walking for pleasure, playing games, sightseeing, and nature walks.

Age Structure of Households

Considering the projected distribution of age for the entire United States, it is estimated that the age group 12-24 will gain about 5 percent of the total population at the expense of the 45-64 age group.[7] The net effect is that participation rates for water skiing, snow sledding, ice skating, and playing games will increase by 5 percent and other participation rates will remain relatively constant.

Larger Households

While no information is available for the specific study areas, it can be assumed that the family size will remain relatively constant. The birth control pill makes planned parenthood possible, but does not dictate the size of households.

White-Non-White People

Because of the recent pressure for equality of minority groups, this study assumes that the socio-economic stigma connected with not being white will be increasingly reduced. This report, therefore, anticipates that a person's color will not dictate his social and economic status in the near future. Therefore, white - non-white percent composition will have no relationship to recreation desires.

Educational Attainment

Although median years of schooling completed by persons 25 years and over may easily be compiled, expressing the change in relative terms in a sense equals the first grade with a year of graduate work. In other words, the original distribution by educational attainment is along a qualitative rather than a quantitative scale.[8] Obviously, however, more people will be graduating from high school and college at a rate perhaps twice that of today.

As a net result, participation rates are expected to rise for boating activities and hiking. All other activity rates will rise slightly with the exception of hunting, fishing, and walking for pleasure.[9]

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[7] ORRRC, P. 30
[8] ORRRC, P. 50
[9] ORRRC, P. 30

Income

Per capita real income is expected to rise 114 percent between 1960 and 2000. Median family incomes will rise from $5,100 for 1960 to $11,100 for 2000 -- almost the same as the per capita income. However, greater changes are expected in real income over the next forty years. While the average real income available per person will more than double, the structure will remain essentially unchanged; hence, the net effects to 2000 attributable to the factor appear very modest indeed. Only very slight changes are anticipated in participation rates.[10]

Blue Collar-Professional-Technical Workers

Very modest shifts are anticipated for occupational patterns. ORRRC anticipates slight increases in Professional-Technical workers (.04%) while there are equal decreases of the percentage of blue collar workers.[11]

In order to estimate the composite effects of the changes in the various socio-economic variables, the study will utilize the standards found in ORRRC's Prospective Demand for Outdoor Recreation. That chart is presented on the following page as Table 27.

These figures are slightly out of order, but it can be seen that multiplying the "Composite of 6 Factors" by the number of user days in Tables 25 and 26 will give us the future demand based on socio-economic changes. This data is presented in Table 28.

The user days reflected in Table 28 are derived by multiplying the number of user days from Tables 25 and 26 by the composite factors increase function (%) + 100% (from Table 27). This results in DEMAND by type of activity for the year 1980 and the year 2000 as modified by assumed changes in socio-economic characteristics. Demand at this point is expressed in terms of total annual times of participation in the specific outdoor recreation categories.

As can be seen from the summary table (Table 28), the most popular activities in the future will be pleasure rides, swimming in all types of facilities, and pleasure walks. These activities, however, now account for 75% of all participation rather than the 76% they accounted for using present per capita rates. This decrease can largely be explained by anticipated increases in vacation trips and weekend trips due to shorter workweeks, longer paid vacations, and more holidays in the future.

These findings will be utilized for the determination of outdoor recreation needs, the next study in this project. The expressed total demand will, in that report, be expressed as potential daily users, evaluated as to whether it represents a resource or a user orientation, examined as to the degree that Delaware residents will actually participate in the State due to the capacity of existing facilities. The findings of this study and the needs study will largely determine the plan and policy that follow.

Limitations of Data

As with any projection technique, there are certain limitations. In this case the limitations are primarily with the data as Dr. Cole's study was conducted during 1963-1964 and, therefore, is somewhat dated. Further, the data base, some 2,000 questionnaires, is rather small as a sample of the Washington-Baltimore-Philadelphia metropolitan region. The sample does, however, indicate the pattern of participation even if it may not exactly duplicate it.

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[10] Ibid. P. 30

[11] Ibid. P. 20

TABLE 27

ESTIMATED NET AND COMPOSITE EFFECTS (PERCENT CHANGES) AND 1960 TO 2000 UPON SELECTED SEASONAL DAYS-PER-PERSON ACTIVITY RATES, EXPECTED FROM CHANGES IN 6 SOCIO-ECONOMIC FACTORS

Season and Activity	Income	Education	Occupation	Residence	Age-Sex	Leisure	6 Factor Composite
Summer: June-August							
Driving for pleasure	8.4	5.7	1.0	-.8	3.1	9.6	29.8
Swimming	22.7	12.3	1.4	2.2	3.5	18.6	75.3
Walking for pleasure	3.9	-.3	1.3	7.7	.6	24.4	41.4
Playing outdoor games or sports	13.0	12.7	1.1	2.5	5.5	29.0	79.7
Sightseeing	14.0	7.2	1.1	2.5	-.4	16.4	46.8
Picnicking	6.5	8.5	.9	2.1	1.9	5.4	27.9
Fishing	-1.5	2.4	-.4	-8.2	2.7	7.9	2.3
Bicycling	-5.9	9.5	.2	-6.1	4.6	0	1.4
Attending outdoor sports events	3.9	9.2	.3	-1.2	2.6	7.1	23.5
Boating other than saling or canoeing	31.1	10.1	1.1	.4	2.3	19.4	78.9
Nature walks	13.0	7.1	-.3	2.5	1.4	9.8	37.6
Camping	25.6	10.5	1.4	-3.8	2.4	44.7	100.6
Horseback Riding	6.6	15.8	-.4	-11.7	4.6	16.7	34.1
Water skiing	54.7	16.1	.5	-.1	7.9	27.2	147.4
Hiking	26.4	15.2	4.9	-.3	1.8	21.8	88.7
Attending outdoor concerts, drama, etc.	21.4	9.8	2.6	1.2	1.7	20.4	69.5
Fall: September-November							
Hunting	3.4	1.6	-2.7	-13.3	4.5	0	-7.3
Winter: December-February							
Hunting	2.6	-2.9	-3.1	-12.7	4.7	0	-11.8
Ice skating	11.7	13.8	-.1	1.6	5.9	46.1	99.6
Sledding or Tobogganing	4.2	10.8	-.2	.7	5.0	26.6	54.2

Another concern with the data is generated by its variance from a report by the U.S. Department of the Interior in 1965 entitled "Outdoor Recreation Trends." The trends indicated in this report are somewhat different than those reported by Dr. Cole, especially in regard to the leading activities. For the purposes of this plan Dr. Cole's study appears to be more related to the region than the national study conducted by the Department of the Interior as Dr. Cole's research is based on the participation rates of residents in the area of Delaware's influence while the national study includes these residents plus residents of the rest of the country. It is doubtful that residents of the central portions of the country have similar characteristics or interests as those in the east.

A detailed and expanded summary of recreation demand of the type conducted by Dr. Cole is essential to accurate planning and will be undertaken during the next updating of the plan.

TABLE 28

Modified User Day Projections Based on Composite Effects of Changes in Socio-Economic Characteristics, Projected Demand for Year 1980 & Year 2000

Activity	Composite Factors: % Increase	1980 User Days (x1,000) Unmodified (Table)	1980 User Days (x1,000) Modified Total	2000 User Days (x1,000) Unmodified (Table)	2000 User Days (x1,000) Modified Total
Pleasure Rides	29.8	16,759	21,753	23,425	30,405
Picnicking	27.9	2,724	3,484	3,805	4,865
Swim-Ocean	75.3	5,277	9,251	7,380	12,940
Pleasure Walks	41.4	10,934	15,461	15,290	21,620
Swim-Pool (not at home)	75.3	9,245	16,208	12,930	22,660
Fishing	2.3	1,708	1,747	2,380	2,435
Boating	78.9	2,278	4,075	3,185	5,700
Ice Skating	99.6	686	1,369	960	1,915
Swim-Lake	75.3	2,701	4,737	3,775	6,620
Swim-Bay	75.3	1,937	3,396	2,705	4,740
Golfing	79.7	794	1,427	1,110	1,995
Swim-Pool (at home)	75.3	5,212	9,137	7,290	12,780
Hunting	-11.8	575	507	805	710
Camping	100.6	312	626	435	870
Horseback riding	34.1	511	685	715	960
Swim-River	75.3	1,150	2,016	1,605	2,815
Swim-Pond	75.3	571	1,004	795	1,395
Tobogganing	54.2	150	321	210	325
Snow Skiing	54.2	150	231	220	340
Vacation Trips[12]	100.0	3,348	6,696	4,695	9,390
Weekend Trips[12]	100.0	3,683	7,366	5,150	10,300

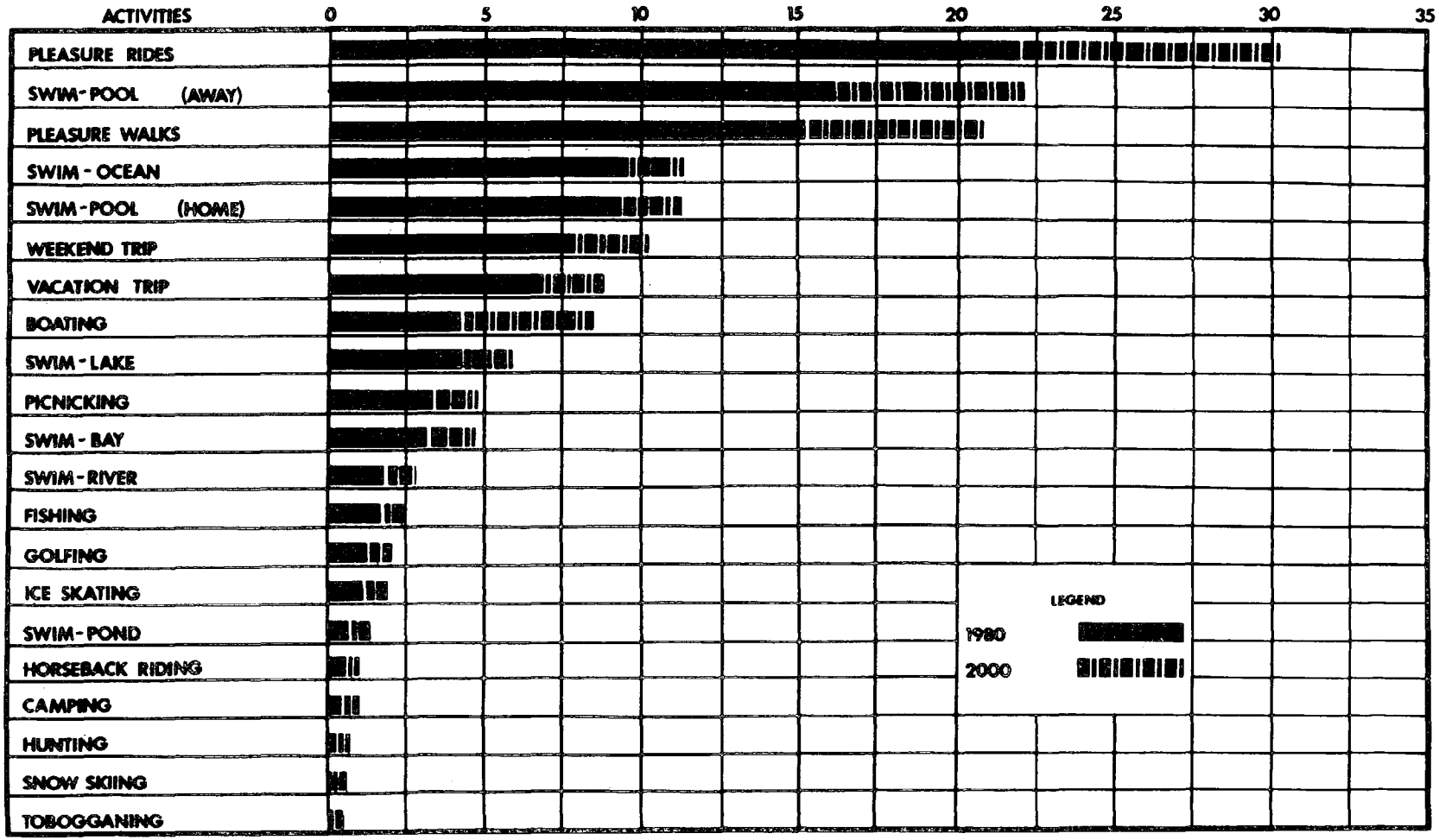
[12] Vacation trips and weekend trips reflect projected decrease in hours of work, a doubling in length of paid vacation, and an increase in numbers of paid holidays from 6 in 1960 to 10 in 2000 (see ORRRC, Report #26, P. 29)

FIGURE 19

USER DAY PROJECTIONS

1980 AND 2000

(X 1,000)



NEEDS

Determination of the total present supply of outdoor recreation facilities and the projection of total demand for various facilities are not sufficient to provide the background data necessary for - plan development. A third element is necessary. This element, computation of need, is the result of subtracting the present inventory from the projected total demand to indicate the level of action necessary to meet the unsatisfied outdoor recreation demand. The Needs Section, therefore, provides the framework of land and facility requirements which can be addressed by State, local and private action and against which progress can be measured.

This section will relate the projected demand; will determine the specific recreational activity needs for 1980 and 2000.

STANDARDS

In order to determine if present facilities are adequate for future needs, maximum capacities of each facility are necessary. Further, if present facilities are not adequate, the deficiency must be expressed in terms of future land and facilities as well as number of presently unserved outdoor recreation participants. For these reasons, standards of space per activity per person or group of persons are required. This section presents standards derived from various reports, plans, and studies prepared by federal, state and local agencies.

It must be recognized that standards serve as a guide to planning, not an absolute measure of need. The character of each site, the nature of the present and potential uses, and the aesthetics or "quality" of the locality will alter the actual acreage needed.

General standards of the "number of acres/1000 population" type are the most commonly used guidelines for delineating areas of primary need and for indicating the areas where emphasis is necessary. These, however, are not adequate for the level of detail to which this project is committed, as they do not allow for breaking down need by specific activity. The standards used in this report relate to specific outdoor recreation activities and allow for translation of projected average users per day into specific land requirements.

The following standards were derived after a review of literature on outdoor recreation planning. A list of the sources for each standard is included at the end of this section. Standards developed by the State Parks Commission or from the park user, boat ramp user, and vacation home surveys conducted as part of the Inventory of Outdoor Recreation Facilities in Delaware, were used where available. Each standard was applied to the projected user days for each specific activity to develop the total needs in terms of person (user) capacity.

STANDARDS FOR SPECIFIC ACTIVITIES

Picnicking

Picnicking is traditionally a family activity taking place during the spring, summer and early fall months (a season of approximately 160 days), with most picnicking participation occurring on weekends and holidays.

The following standards and formulas are used for determining needs:

Standards[13]

Percent of participation occuring on peak days	=	60%
Turnover rate per day per table (TR)	=	2
Peak days per season (Sundays and Holidays) PD	=	14
Persons per table per party (PT)	=	4.5
Tables per acre (TA)	=	13

Formula

a) Table needs = $\frac{\text{User Days x 60\%}}{\text{(PD) x (TR) x (PT)}} = \frac{\text{User Days x 60\%}}{14 \times 2 \times 4.5}$

$= \frac{\text{User Days x 60\%}}{126}$

b) Land needs = $\frac{\text{Table Needs}}{\text{(TA)}} = \frac{\text{Table Needs}}{13}$

Camping

Camping is also a family activity, occurring most frequently on weekends or short vacations during the summer season (assumed at 84 days).

[13] See Notes and Sources of Standards (end of Needs Section)

The following standards and formula are used for determining camping needs:

Standards[14]

Percent of participation occuring on peak days	=	60%
Turnover rate per day per unit (TR)	=	1/2
Number of peak days (2 day weekends) PD	=	36
Campers per camp unit (c)	=	4.5
Units per acre (CU) @ 8,000 square feet each	=	5

Formula

Number of Units = $\frac{\text{User Days x 60\%}}{\text{(PD) x (TR) x (c)}} = \frac{\text{User Days x 60\%}}{36 \times 1/2 \times 4.5}$

$= \frac{\text{User Days x 60\%}}{81}$

Number of developed acres = $\frac{\text{Number of Units}}{\text{CU}} = \frac{\text{Number of Units}}{5}$

Boating and Water Skiing

Boating is one of the most rapidly increasing outdoor recreation activities, largely due to continued prosperity and increasing amounts of leisure time. As noted in the Demand Study, participation in boating is expected to account for 5,700,000 user days in the year 2000. Water skiing, one of the common boating activities is assumed to account for 10% of the total boating demand and is broken out separately because slightly different standards are involved when water skiing is possible. The following standards and formulas are used for computing needs for these facilities:

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[13] - [14] See Notes and Sources of Standards (end of Needs Section)

Standards - Boat Launches[15]

Boat Launch Capacity (12 feet wide) = 40 Boats per day

Standards - Boating[16]

Percent of total participation (non-water skiing)	=	90%
Percent of participation occurring on peak days	=	60%
Peak days in season (PD)	=	28
Turnover rate per day (TR)	=	1.25
Persons per boat (PB)	=	3
Acres per boat (AB)	=	2

Formula

$$\text{Water acres needed} = \frac{90\% \text{ of User Days} \times 60 \times AB}{PD \times TR \times PB} = \frac{90\% \text{ of User Days} \times 60\% \times 2}{28 \times 1.25 \times 3}$$

$$= \frac{90\% \text{ of User Days} \times 120\%}{105}$$

Standards - Water Skiing

Percent of participation	=	10%
Percent of participation occurring on peak days	=	60%
Peak Days in season (PD)	=	28
Turnover rate per day (TR)	=	2
Persons per boat (PB)	=	3
Acres per boat (AB)	=	5

Formula

$$\text{Water acres needed} = \frac{10\% \text{ of User Days} \times 60\% \times AB}{PD \times TR \times PB} = \frac{10\% \text{ of User Days} \times 60\% \times 5}{28 \times 2 \times 3}$$

$$= \frac{10\% \text{ of User Days} \times 300\%}{168}$$

The standards for water skiing should be applied only to inland bays and lakes as these areas would best accommodate this activity. It must be assumed that where water skiing is possible, i.e., permitted by regulation and natural features, that ten percent of the available water area will be so used. It should be noted that Delaware Laws prohibit water skiing on State-owned impounded water areas.

Swimming

As was shown in the Demand Study, swimming of all types was among the most popular outdoor recreation activities. The following standards are assumed to be relevant for swimming in the ocean and bay.

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15 See Notes and Sources of Standards (end of Needs Section)

16 See Notes and Sources of Standards (end of Needs Section)

Standards for Swimming Beaches (Ocean and Bay)[17]

Percent of participation on peak days (P)	=	60%
Number of peak days (PD)	=	28
Turnover rate (TR)	=	3
Square feet of beach per user (SFB)	=	135
Safe distance from shore in water	=	25 feet
Maximum desired beach depth from water	=	200 feet

Formula

$$\text{Beach area needed}^* = \frac{\text{User Days} \times (PD) \times (SFB)}{(PD) \times (TR)} = \frac{\text{User Days} \times 60\% \times 135}{28 \times 3}$$

$$= \frac{\text{User Days} \times 60\%}{84}$$

Standards for Swimming Beaches (Ponds and Lakes)[17]

Percent of participation on peak days (P)	=	60%
Number of peak days (PD)	=	28
Turnover rate (TR)	=	3
Square feet of deck area per user (SFD)	=	75
Square feet of water area per user (SFW)	=	50
Percent of users in water at one time (PW)	=	25%
Percent of users not in water (PNW)	=	75%

Formula

$$\text{Beck area needed}^* = \frac{\text{User Days} \times (P) \times (PNW) \times (SFD)}{(PD) \times (TR)} = \frac{\text{User Days} \times 60\% \times 75\% \times 50}{28 \times 3}$$

$$= \frac{\text{User Days} \times 45\% \times 50}{84}$$

$$\text{Water area needed}^* = \frac{\text{User Days} \times (P) \times (PW) \times (SFW)}{(PD) \times (TR)} = \frac{\text{User Days} \times 60\% \times 25\% \times 30}{28 \times 3}$$

$$= \frac{\text{User days} \times 15\% \times 30}{84}$$

$$\text{Number of pools} = \frac{\text{Water area needed}}{\text{4,500 square feet per pool}}$$

*It should be noted that these standards for swimming activities give area needs in square feet. They must be divided by 43,560 to obtain the number of acres needed. Parking area needs are computed by determining the total peak day number of users (i.e., User Days x Percent Participation) divided by the product of the turnover rate and the number of peak days, which yields the instant capacity need in users. This is translated into number of vehicles by assuming 4.5 users per vehicle and into acreages by assuring 350 square feet per vehicle or 124.5 vehicles per acre.

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[17] See Sources of Standards (end of Needs Section)

Golf Courses[18]

According to projected changes in socio-economic characteristics, golf will become increasingly more popular. Approximate total golf course needs can be calculated from the following general standards:

a. Urban areas - one golf course per 36,000 people (18 holes) or one golf hole per 2,000 people.

b. Rural areas - one golf course per 54,000 people (18 holes) or one golf hole per 3,000 people.

c. Minimum acres needed for 18 holes = or ten acres per hole

d. Turnover rate = 2.5

e. Number of users at one time per 18 holes = 200

Fishing[19]

The following standards are used for fishing:

a. boat fishing - 1 acre of water surface per every 4 fishermen assuming 2 fishermen per boat (2 anchored boats per acre)

b. stream, lake or pond from shore - 1 mile of shore per every 10 fishermen

c. boat launches at lakes, ponds and other impounded waters - one for every 300 acres or fraction of water surface, having at least 15 acres of public access area and 750 feet of water frontage per access

d. Use standards:

Number of peak days = 28
% of participation on peak days = 60%
turnover rate per day = 2

Hunting[20]

By its very nature, hunting is a rural area activity. Much of the projected decline in future participation rates for this activity is, in fact, explained by the continued urbanization of the State and the metropolitan region which reduces the amount of rural space.

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[18] See Sources of Standards (end of Needs Section)

[19] See Sources of Standards (end of Needs Section)

[20] See Sources of Standards (end of Needs Section)

Since hunting involves a potential hazard, large areas per hunter are necessary. For this reason the following standards have been used:

a. Controlled area of 300-500 acres to accommodate 50 hunters per every 4 acres or a total capacity of 24-40 hunters at one time, a somewhat larger area should be allowed where deer hunting is most popular.

b. Assumed season = 84 days

c. Turnover rate per day = 1

d. Participation evenly spread over entire season, i.e. = 84 peak days

Horseback Riding

As most of Delaware is rural in character, it is assumed that much of the participation in this sport will take place in these rural areas on local roads or on agricultural lands. Further, additional riding will be accommodated in some of the private country clubs in the northern portion of the State. For the purposes of this report it is assumed that much of the total demand will have to be accommodated in public areas. Bridle trails in public areas should be separate from trails for walkers or access to other facilities. They should also avoid crossing roadways and railroads and should not be located where unexpected or unusual noise or motion could excite the horses. The bridle trail should be wide enough to accommodate at least two horses side-by-side and for maintenance access and should provide areas where groups of up to ten horses could stop. Finally, bridle areas should be located in areas having scenic value. The following standards are used:[21]

Width of Trail	=	10 feet
Group Size	=	4 or 5
Length	=	1-5 miles
Turnover Rate	=	4
Enclosed Area	=	60 acres accommodates 4 groups

Nature Centers[22]

Capacity at one time, number of users	=	60
Turnover rate	=	3
Trails, time to traverse	=	1/2 to 1 hour each
Site area for center, minimum	=	2 acres

Hiking Trails[23]

Daily capacity	=	40 hikers / mile / day
Trails, time traverse	=	various times from 1/2 hour

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21 See Sources of Standards (end of Needs Section)

22 See Sources of Standards (end of Needs Section)

23 See Sources of Standards (end of Needs Section)

Other Activities

Standards have not been included in this report for such winter sports as ice skating, snow skiing, and tobogganing as the study has assumed that Delaware does not have the natural resources to compete with nearby areas for participants.

Standards are not included for pleasure riding and pleasure walking as these are hard to quantify due to wide variations in individual participant taste. The same problem also exists for vacation and weekend trips. For these activities this section will only recognize a demand which must be accommodated in the plan portion of this report.

Notes and Sources of Standards

13. Picnicking - Standard from Nebraska Outdoor Recreation Plan, 1968, modified based on findings of Park User Survey and Parks, Recreation and Forestry Division data.

14. Camping - Standard from Nebraska Outdoor Recreation Plan, 1968, Turnover rate modified to reflect the assumption that camping is a two-day event, hence a turnover rate per day of 1/2.

15. & 16. Boating - Boat Launch standard from U.S. Corps of Engineers Manual. EM 1130-2-312, Washington, D.C., May 1, 1968, modified by Parks, Recreation and Forestry Division data.

17. Swimming - Standards from Delaware Division of Parks, Recreation and Forestry.

18. Golf Course - Standard from Urban Land Use Planning, 2nd edition, F. Stuart Chapin, Jr., University of Illinois, Urbana, 1965, and Division of Parks, Recreation and Forestry.

19. Fishing - Boat fishing standard from Division of Parks, Recreation, and Forestry. Stream standard from Placer County, California, Recreation Commission. Boat launch standard from Tennessee State Planning Commission.

20. Hunting - Standard from Soil Conservation Service, "Considerations for 7 categories of Recreation, Book of Recreation Reference Part II," Washington, D.C.

21. Horseback Riding - Standard from Louisiana Parks and Recreation Commission, Louisiana Statewide Comprehensive Outdoor Recreation Plan, Supplement I, Baton Rouge, La., August 10, 1966, modified by data from the Division of Parks, Recreation, and Forestry.

22. & 23. Nature Centers and Hiking standards from Charles T. Main, Inc., Master Plan Report for Lums Pond State Park, Division of Parks, Recreation and Forestry, State of Delaware.

RECREATION CAPABILITIES OF EXISTING AND PRIVATE FACILITIES

Methodology

The following section presents information on present capacities, by activity, for recreational facilities provided by both the public and private sectors in Delaware. The method by which these figures were derived for each activity is described below:

Picnicking - The total number of available picnic tables was tabulated based on a 1967 recreation inventory conducted by the State Planning Office. To determine the number of people that could be accommodated in one day, the total number of tables was multiplied by average family size (4.5) and by the rate of turnover (2). Figures for average family size and rate of turnover were determined by user surveys conducted by the State Parks Commission and are the same as the assumed standard for this activity.

Boating - Several methods were used to determine the capacity of facilities for boating. For areas having berths, the number of these was multiplied by 3, the assumed average party size. Where boat ramps were available, a Corps of Engineers standard of 40 boats per ramp per day was used. In areas lacking either boat ramps or berths, a standard of 2 acres of water surface per boat was applied, assuming a turnover rate of 1.25.

Camping - To determine the number of campers that could be accommodated in one day, the number of campsites was multiplied by the average family size, 4.5. Since camping is an overnight activity, no daily turnover factor was applied. Figures for numbers of camp sites were obtained from the 1967 recreation inventory.

Swimming (Pond) - The daily capacities for swimming in ponds were determined by multiplying the number of existing parking spaces at a recreation area by 4.5 (average family size), and applying a turnover factor of 3. In cases where no formal parking spaces exist, the standard of 145 people per acre of beach was applied.

Swimming (Bay) - Capacities for swimming in the Bay were determined by multiplying available parking spaces by average family size, assuming a daily turnover of 3.

Swimming (Ocean) - The daily number of participants in ocean swimming was calculated by two methods. When the number of parking spaces for an area was known, the number of these was multiplied by 4.5 (average family size) and a turnover factor of 3 was applied. In other cases, a standard of 145 swimmers per acre of ocean beach was used, with a turnover factor of 3.

Fishing - Capacities of areas for fishing were calculated using two methods. For salt water areas, the number of available parking spaces was multiplied by 2 (the assumed participation rate per vehicle), and a turnover factor of 2 was applied. For fresh water areas, capacities were determined by applying a standard of 2 fishing boats per acre of water, with a turnover of 2 and assuming 2 persons per boat.

Hunting - It is difficult to measure the total supply of land in the State available for hunting purposes. There are many landowners who permit limited hunting on their farms, but the exact number is difficult to ascertain. As noted in a later section, the number is decreasing. However, based on information obtained in the 1967 survey, it is estimated that there are approximately 26,000 acres available for hunting. Using the standard of 50 acres per every 4 hunters, approximately 2,313 hunters can presently be accommodated per day.

Present Capacities by Activity

Table 29 shows the present daily capacity for various recreational activities in both the public and private sectors. These figures supply a basis for calculating present and future deficiencies based on recreation needs. The data on the public sector includes areas administered by the Department of Natural Resources and Environmental Control, State Highway Department, New Castle County Parks and Recreation Commission, U.S. Department of the Interior, and the municipalities in Delaware.

TABLE 29

SUMMARY OF DAILY CAPACITIES
BY RECREATIONAL ACTIVITY, 1967
(No. of Persons)

Activity	Public Sector	Private Sector	Total for State
Picnicking	15,778	7,361	23,139
Boating	2,400	5,500	7,900
Camping	5,160	11,907	17,067
Swimming (Pond)	14,151	4,218	18,369
Swimming (Bay)	5,860	15,732	21,592
Swimming (Ocean)	127,180	-	127,180
Fishing	11,564	8,607	20,171
Hunting	2,080	233	2,313

Source: 1967 Recreation Inventory conducted by the Delaware State Planning Office

Other Activities - Daily capacities for other activities have not been included due to lack of data. That does not mean that attention should not be given to these categories, merely that deficiencies must be measured in subjective rather than absolute terms. General comments on these activities are included in the next section, projected total need.

TOTAL PROJECTED NEED BY ACTIVITY

Picnicking

Using the standards for picnicking and the projected number of user days for this activity, it is calculated that the total table need will be approximately 16,590 in 1980 and 23,165 in the year 2000. Translated into land needs this means 1,276 acres of picnic tables in 1980 and 1,782 acres in the year 2000. These amounts would be adequate to accommodate the peak day users during the assumed picnicking season. This acreage would also include parking areas and access.

Camping

Based on projected user days of 626,000 in 1980 and 870,000 in the year 2000, a total of 925 acres and 1,290 acres will be needed respectively. This acreage would accommodate 4,635 camping units in 1980 and 6,445 units in the year 2000, assuming that 60% of the total participation in this activity would occur on fourteen peak weekends during the summer. As each camp unit is assumed to be comprised of 4.5 persons this means accommodations for 20,860 persons in 1980 and 29,000 persons in the year 2000.

Boating Needs

Water area needs - based on the 1980 and 2000 projected user days of 4,075,000 and 5,700,000 respectively and using the standards specified for boating, there will be a total need for 41,900 acres in 1980 and 58,620 acres of water area in the year 2000 in order to satisfy peak day demand. As the State presently owns or leases 2,894 acres of water, this means a total need for 39,006 acres of water additionally in 1980 and 55,726 acres additionally in the year 2000. Some of this demand, however, will be met by the water area of the inland bays. Nevertheless, additional water areas should be provided, especially fresh water ponds, in the urban portions of the State. The plan portion of this report will evaluate potential locations for meeting these needs.

Water skiing needs are computed from the assumption that ten percent of the total boating demand will be for this activity. Therefore, the total user days in 1980 and 2000 are 407,500 and 570,000 respectively. Based on the standards a total of 72,760 acres and 101,700 acres of water will be needed in the two periods. Obviously this figure is of little value as the sport occurs throughout the entire bay and inland bay areas and at probably less ideal conditions than the standard implies. Nevertheless, the computation does allow for evaluation of boat launch needs.

Boat launch needs are computed by determining the number of user per peak day which is then divided by the number of people per boat. This yields the number of boats, which divided by the daily boat launch capacity equals the number of launches needed. In 1900 and 2000 approximately 730 and 1000 launches will be needed respectively. Many of these will not be formal launching areas, however, they will be a high demand for location from which to launch a boat. Land needed to meet these requirements will depend on the present supply of such launches and on the ability of the grounds at each to allow sufficient parking for vehicles and trailers (each ramp should have at least one acre of supporting ground for parking purposes and launching - this area will support up to 60 vehicles and trailers including those loading and unloading boats).

Pleasure Riding

Total need for pleasure riding cannot easily be expressed in terms of miles of road needed or some other physical measure. However, the magnitude can be shown by calculation of the

number of peak day trips for this purpose. Assuming that 60 percent of the participation occurs on peak days and that there are 40 peak days in a year (mostly Sundays and holidays in all seasons except winter), the typical peak day participation will be: User Days Projected x 60%. This calculation yields 326,290 users per peak day in 1980 and 456,075 in the year 2000. At 4.5 persons (participants) per vehicle this means that 72,509 vehicles in 1980 and 101,350 vehicles in 2000 will be pleasure riding on a peak day. If all of these vehicles were to use major Delaware highways for this purpose, intolerable congestion could result. It is imperative, given this demand, that "pleasure riding" roadway networks be developed so that major roads may serve their primary function. These new routes could lead the pleasure rider through agricultural areas to historic sites, inland recreation areas, smaller communities, or other points of interest.

It should be noted that some of this demand will be deterred from participation as congestion increases and as urbanization makes natural landscape less available for visual pleasure. It is most important that the State does not attempt to satisfy this type of outdoor recreation by large scale improvements to existing major highways, as such may negate both the pleasure aspect and the traffic carrying function of the highway itself by directing the pleasure rider into the already congested recreation areas.

Pleasure Walking

No standards exist for this activity, hence it is impossible to quantify the need for facilities for its enjoyment. Nevertheless, this activity is projected to include 15,461 user days in 1980 and 21,620,000 user days in 2000. This is the third most popular outdoor recreation activity. As most of this participation will occur in urban areas, the plan must provide for scenic pathways, and intra-urban greenspaces, walkways and trails in the various parks, and natural preservations in which persons may walk for pleasure.

Hunting

As noted earlier in the standards section, hunting is basically a rural activity. Continued urbanization and utilization of former woodlands and wetlands for residential or other purposes will result in a future decline in hunting activity. In spite of this decline, user days are projected at 507,000 in 1980 and 710,000 in the year 2000. Assuming a season of 84 days and at 50 acres per every 4 hunters, over 75,434 acres will be needed in 1980 and over 97,135 acres will be needed by the year 2000. Much of this need will be met by private sources, i.e., farms opened for hunting by their owners or commercial forest holdings. However, State or Federal lands will also be heavily used and additional lands may be required.

Horseback Riding

The 1980 and 2000 total user days for this activity are 685,000 and 960,000 respectively. Assuming that 60 percent of the participation occurs on 28 peak days, this means a peak day demand of 14,670 users in 1980 and 20,600 users in 2000. With a turnover rate of 4 on each trail, this means daily instant capacity need of 3,675 and 5,150 users in 1980 and 2000 respectively. This demand means a total need for 11,000 acres in 1980 and 15,450 acres in 2000 for this activity.

Fishing

Total user days of this outdoor recreation activity are projected at 1,747,000 in 1980 and 2,435,000 in the year 2000. Based on the standards for this activity it is assumed that 60 percent of this activity occurs on peak days and that there are 28 such peak days in a season. Therefore, the average peak day will equal 37,435 fishermen in 1980 and 52,180 fishermen in the year 2000.

Assuming further that 50 percent of these people fish from a boat and that the turnover rate is 2 for all fishermen, the following instant capacity must be met in 1980:

a) Boat = 37,435 x 50% ÷ 2 = 9,360 fishermen
b) Shore = 37,435 x 50% ÷ 2 = 9,360 fishermen

The year 2000 demand is calculated as:

a) Boat = 52,180 x 50% ÷ 2 = 13,045 fishermen
b) Shore = 52,180 x 50% ÷ 2 = 13,045 fishermen

Since Delaware has both fresh and salt water fishing areas, with the latter being especially abundant, and since information on participation by type of water is not available, no additional breakdowns have been made regarding this activity. Instead, the planning section will determine instant capacity of each existing and proposed facility, and relate these to the total demand.

One subsidiary calculation is necessary, however, that being the boat launch requirements generated by fishermen using boats. Assuming 2.0 persons per boat, a turnover rate of 2 and a maximum capacity of 40 boats per day per launch, the above boat fishing demands yield 9,360 boats and 13,045 boats in 1980 and 2000 respectively or 234 and 326 launches in the two periods. At one acre of parking per boat launch, this means 234 and 326 acres of parking for the two periods.

Swimming - Ocean

Total needs for swimming in the ocean can be calculated from the standards for this activity and the projected user days. Using the following formula:

User Days x Percent on Peak Days
Number of Peak Days x Turnover rate
the instant capacity number of users can be computed.

The 1980 and 2000 user days for this activity are 9,251,000 and 12,940,000. These yield a need for space for 65,540 users and 92,428 users at one time in 1980 and 2000 respectively At 135 square feet of beach per user the 1980 and 2000 space needs are 8,847,900 square feet and 12,477,780 square feet respectively. Further, at a maximum distance of 200 feet from the water a total of 44,329 and 62,389 lineal feet of beach will be needed or a minimum of 8.4 and 11.8 miles of beach respectively. In terms of beach acres this demand requires 203 acres and 286 acres in 1980 and 2000 for ocean swimming use only.

Parking spaces for these participants will be a critical element regarding this activity. Assuming that 60 percent of the participation occurs on peak days, and that there are 28 days, and using a turnover factor of 3, a typical peak day will find 66,000 participants in 1980 and 92,400 participants in 2000. At 4.5 persons per vehicle this means a total of 14,650 vehicles in 1980 and 20,530 vehicles in 2000.

In order to accommodate these vehicles, 118 acres of parking will be needed in 1980 and over 167 acres of parking in the year 2000, assuming 350 square feet per parking space. The plan and individual park designs must carefully relate this need to road and beach accesses and retention of the natural shoreline character of the beach areas.

Swimming - Bay

The projected user days for this activity are 3,396,000 and 4,740,000 for 1980 and 2000 respectively. Using the same standards as indicated for ocean swimming it is calculated that 24,257 users will have to be accommodated at one time in 1980 and 33,850 users in 2000. At 135 square feet of beach per user the respective space needs are 3,274,695 square feet of beach and 4,569,750 square feet of beach. This equals 75 acres and 105 acres in 1980 and 2000 respectively.

Accommodating this need should not pose any problem given Delaware's large bay areas (Delaware Bay, Indian River Bay, Rehoboth Bay, and little Assawoman Bay). It is possible, in fact, that the abundance of these areas could result in a shift in other swimming categories if these should become relatively congested.

Parking requirements for this activity are estimated at 43 acres and 60 acres in 1980 and 2000 respectively.

Swimming - River

Few of Delaware's inland rivers, or the Delaware River itself, are suitable for swimming due to pollution, lack of access, or condition of the river bed. Therefore, it is assumed that most of these participants will use the inland bays where adequate water is available. The user days for this activity have been included with swimming in a lake or pond.

Swimming - Lake, Pond and River

As the distinction between lakes and ponds is relatively insignificant in Delaware, the total user days for these categories have been combined with those for swimming in a river. The total user days, therefore, are 7,757,000 in 1980 and 10,830,000 in the year 2000. This activity is projected as requiring 72 and 100 beach acres in 1980 and 2000 respectively. Because pond and lake size is measured in terms of acres rather than miles of shoreline, the water area breakdown is 15 acres in 1980 and 22 acres in 2000.

Parking requirements for this activity are projected at 99 acres in 1980 and 139 acres in the year 2000 using 350 square feet per vehicle for parking and 4.5 persons per vehicle.

Swimming - Pool (Not at Home)

Assuming that 60 percent of the participation in this activity occurs on 28 peak days and a turnover rate of 3, the projected instant capacity participants in 1980 and 2000 are 155,770 and 161,850 respectively. Of these, 75 percent will be using deck areas surrounding the pool, and 25 percent will be in water. At 50 square feet of deck area per user the participants not in the water will require 100 and 139 acres of deck surface in 1980 and 2000. The participants in the water require 30 square feet of water each or a total of 868,290 square feet and 1,213,890 square feet in 1980 and 2000. At 45,000 square feet per pool this means 193 and 269 pools in the two periods. At 4.5 participants per vehicle and 350 square feet per car these users (both in and not in the water) will require 206 and 289 acres of parking in 1980 and 2000 respectively.

Winter Sports - Ice Skating, Tobogganning, and Snow Skiing

This study assumes that most of the participation in these sports will occur in neighboring states as the State's natural resources are not suited to such activities. Ice skating, the most "local" of the winter sports should require few major facilities at the State level since Delaware abounds in small ponds and stremas whose frozen surfaces should suffice. Ice skating areas may, however, be an appropriate extra at some State parks.

Vacation and Weekend Trips

These outdoor recreational activities do not easily lend themselves to application of standards or calculation of need. It is assumed that the impact of these activities will be felt most in the private sector as demand for motels, hotels, restaurants, and commercial amusements. It is further assumed that the recreational needs of these participants, whose primary trip purpose is sightseeing, will be relatively minor from the State standpoint and will be satisfied by commercial and municipal parks, playgrounds, swimming pools, and similar facilities.

Golfing

It is assumed that facilities needed for this activity will largely be provided by local, public and private golf courses, and that State involvement will be limited. No calculation of need has been made; however, interested readers are referred to the demand study which indicates projected total user days for this sport. Golf courses may be included in certain state parks if these facilities seem appropriate to the overall development program and the availability of private facilities. Where included, however, they will have low priority.

Other Uses

Standards are included for native centers and for hiking trails, however, no computation of need has been made. These standards are useful for specific design applications and will be utilized wherever the facility seems appropriate in the development of an outdoor recreation facility.

TABLE 30

SUMMARY OF PROJECTED NEEDS BY ACTIVITY
TO MEET PEAK DAY DEMAND

Activity	1980	2000
Picnicking		
Tables	16,590	23,165
Acres of Land	1,276	1,782
Acres of Parking**	(133)	(186)
Camping		
Units	4,635	6,445
Acres of Land	925	1,290
Users	20,860	29,000
Boating		
Water Acres	41,900	58,620
Launches	730	1,000
Acres of Parking	582	814
Pleasure Riding		
# of Vehicles	72,509	101,350
Pleasure Walking	*	*

TABLE 30 (Continued)

Activity	1980	2000
Hunting		
Acres of Land	75,434	97,135
Horseback Riding		
Acres of Land	11,000	15,450
Fishing		
From Boat - # Fishermen	9,360	13,045
From Shore - # Fishermen	9,360	13,045
# Boat Launches	234	326
Acres of Parking	234	326
Swiming - Ocean		
Acres of Beach	203	286
Miles of Beach	8.4	11.8
Parking Acres	118	167
Swimming - Bay		
Acres of Beach	75	105
Parking Acres	43	60
Swimming - Lake & Pond		
Acres of Land	72	100
Parking Acres	99	139
Acres of Water	15	22
Swimming - Pool (Not at Home)		
# of Pools	193	269
Acres of Parking	206	289
Winter Sports	*	*
Vacation & Weekend Trips	*	*
Golfing	*	*
Total Acres of Land & Beach	89,118	116,334
Total Acres of Water	41,915	58,642
Total Acres of Parking	1,282	1,795
Total Number of Boat Launches	964	1,326

* Total needs not calculated - see text
** Picnicking - acres of parking included in total acres of land for this activity

TABLE 30 (Continued)

Source: Delaware State Planning Office calculation based on findings of demand study and assumed standards

Note: All needs shown are mutually exclusive as to actual incidence of participation. It is possible that a user may participate in more than one activity during a day (i.e., camping and fishing), however, the incidence of participation is assumed to be separate and is reported separately.

OUTDOOR RECREATION NEEDS, DEFICIENCIES

Preceeding sections of this report have presented the capacity of existing facilities and the projected total need based on the demand study. The findings of these sections have been translated into peak day users for eight categories of outdoor recreation activity.

As can be seen from Table 31, significant capacity deficiencies are noted for both 1980 and 2000 in each of the eight categories. These deficiencies range from over 185,000 users for picnicking in the year 2000 to less than 5,500 users for hunting in the same year.

The impact of these deficiencies in peak day user capacities will have to be evaluated in the plan section of this project. Policy decisions will have to be made regarding the State's ability to fully meet this need and the areas of the State which would have priority. Additional decisions will be necessary for the categories which have not been included.

In some cases, the State may wish to adopt a policy of not providing the facilities in order to avoid conflicts with the role of the private sector. In others, a deliberate policy of discouraging participation may be necessary or desirable.

The need is readily apparent from the findings of this study. With or without facilities, much of the projected participation will occur. Without facilities, much of the quality and natural value of the present resources may be lost. With proper action at the State and at other levels, the need may be met consistent with the preservation of the State's limited natural resources.

Because some of the activities are user-oriented as to the location of the participation, it is possible to assign some of the projected deficiencies to areas smaller than the State. User-oriented activities include picnicking, pleasure walking, fishing, hunting, swimming in pool, golfing, and horseback riding. For these activities, the participant usually travels less than 25 miles from his home, hence the need is concentrated in direct proportion to residential concentration.

If an "urban" concentration can be assumed in a portion of the State, needs in these activities can be geographically refined. For the purpose of this paper, the Wilmington Metropolitan Area as delineated in the Preliminary Comprehensive Development Plan will be used as the "urban" concentration. This area is projected to have 477,000 residents in 1980 or 66.7 percent of the total State population. Hence, it is assumed that for user-oriented activities, 66.7 percent of the need will also be concentrated here.

TABLE 31

PROJECTED DAILY CAPACITY DEFICIENCIES BY ACTIVITY[1]
FOR YEARS 1980 and 2000
STATEWIDE

(No. of Persons)

Activity	Present Daily Capacities[1]	1980 Capacities Needed[1]	1980 Peak Day Deficiency	2000 Capacities Needed[1]	2000 Peak Day Deficiency
Picnicking[2]	23,139	149,314	126,175	208,500	185,361
Boating	7,900	16,052	8,152	22,500	14,600
Camping	17,067	20,860	3,793	29,000	11,933
Swimming (Pond)	18,369	38,331	19,962	51,660	33,291
Swimming (Bay)	21,592	72,771	51,179	101,550	79,958
Swimming (Ocean)	127,180	198,000	70,820	227,200	100,020
Fishing	20,171	37,440	17,269	52,180	32,009
Hunting[3]	2,313	6,035	3,722	7,770	5,457

Source: 1967 Recreation Inventory Conducted by Delaware State Planning Office.

[1] Capacity shown is daily capacity which is the number of users in one peak day. This should not be confused with instant capacity which is the number of users at one time during the day.

[2] Excludes many privately owned picnic areas and numerous informal areas not having picnic tables.

[3] These figures are somewhat misleading, since they do not include many privately owned farms where hunting is permitted on a restricted basis.

A population projection for this area is not available for the year 2000; however, this report assumes that: (a) the area will continue to be the most developed portion of the State through 2000; (b) the proportion of total State population will decline slightly due to urban development in other portions of the State; and (c) the proportion of State population in 2000 will approximate 60 percent. Therefore, based on these assumptions 60 percent of the need for user-oriented activities will be located in the Wilmington Metropolitan area.

The following Tables (32 and 33) represents the application of these assumptions to the projected total capacity needs.

Unfortunately, recent capacity data is lacking for the urban area for all of the categories of user-oriented activities. Only picnicking, fishing, and hunting capacities are available, and these only reflect the public sector. Using the available date the following apparent deficiencies in terms of people capacity can be calculated:

Some comments are necessary, however, regarding Table 33. First, it is known that a number of private facilities provide for much of the picnicking and fishing need, and that informal use of private property is also common place along the many streams in the urban area. Therefore, the projected deficiencies are somewhat misleading. Second, while a major hunting deficiency is noted, it must be assumed that due to a shortage of land suited and open for hunting, many of the participants travel outside the area. Hence, hunting in the urban Delaware case is more of a resource-oriented than user-oriented activity. Therefore, the apparent deficiency is relevant only to the degree that hunting is assumed to be user-oriented. It is the opinion of this report that the apparent deficiency in this case is also misleading, as sufficient hunting areas do exist outside the urban area and within a reasonable travel distance and time.

This brings up a major problem with a study of this type. Methods of collecting complete data on the capacities of privately provided facilities are not sufficiently developed to allow the continuation of needs analyses at a small geographic level. As this problem cannot be overcome within the time frame of this report, this project must assign the plan section the task for showing that the facilities provided by the State help to meet a need, for which a portion of the responsibility may lie with lower levels of government and the private sector.

The State must take the lead in establishing procedures for compilation of the necessary data. It is hoped that this lead will be established and the necessary data collected prior to the next updating of the outdoor recreation plan.

TABLE 32

URBAN AREA DAILY CAPACITY NEEDS, 1980 AND 2000
(No. of Persons)

User-Oriented Activities	1980 State Need	1980 Urban Factor	1980 Urban Need	2000 State Need	2000 Urban Factor	2000 Urban Need
Picnicking	149,314	66.7%	99,548	208,500	60.0%	125,100
Fishing	37,440	66.7	24,968	52,180	60.0	31,310
Hunting	6,035	66.7	4,025	7,770	60.0	4,670
Swimming in Pool	155,770	66.7	103,850	161,850	60.0	(a) 103,850
Horseback Riding	14,670	66.7	97,804	20,600	60.0	123,600

(a) Application of a 60% to the 2000 demand for pool swimming would result in an urban need of 97,110, however, it is assumed that regardless of the trend of urbanization in the rest of the State, the urban demand would be at least as great in 2000 as in 1980.

TABLE 33

URBAN PORTION OF DELAWARE
OUTDOOR RECREATION NEEDS, 1980 & 2000
(SELECTED ACTIVITIES)

Activity	1980	2000
Picnicking		
Need		
Capacity (present)	9,800	9,800
Deficiency		
Fishing		
Need	24,968	31,310
Capacity (present)	1,460	1,460
Deficiency	23,508	29,850
Hunting		
Need	4,025	4,670
Capacity (present)	296	296
Deficiency	3,729	4,374

ANALYSIS

THE QUALITY ASPECTS OF OUTDOOR RECREATION

Many of the qualities which contribute to the enjoyment and importance of outdoor recreation facilities cannot be measured by dollars, user capacities, or other tangible units. These abstract intangible qualities, which are so often overlooked, have significant value in a comprehensive outdoor recreation plan.

The demand for outdoor recreation facilities cannot totally be met by the provision of large areas of undeveloped land, nor can it be totally met by the intensive development of smaller areas into ballfields, picnic tables, concessions, and parking lots.

The word "recreation" literally means re-creation, a restoration of the psychological as well as the physiological well-being. There must also be the quite place, the sense of belonging to a natural order, and the place for recognition of our natural and cultural heritage. Hence, a plan for outdoor recreation must give consideration to the aesthetic values just as it must consider the functional value of these natural and scenic resources. Both values need protection and preservation through a careful and important role in the planning process.

Natural resources such as forest and unaltered waterways provide a welcome psychological relief from the over-paved, over-utilized character of our urban areas. These same areas provide opportunities for hunting, fishing, camping, and hiking activities, all of which provide links with our national heritage.

Coastal marshlands, which provide visual character and a sense of remoteness to the landscape, also serve as spawning grounds for fish, habitat for migratory waterfowl, shelter for small wildlife, and the sources of food essential to shell fish and other marine life. Once destroyed through indescriminate filling, this ecological chain and the aesthetic character are irrevocably lost.

Destruction of the wetlands, coupled with filling in of natural drainage have further impacts. Not only are these areas lost from visual enjoyment, but their loss greatly increases the risk of flooding. Furthermore, these aquifer recharge areas which should have been protected have been covered with streets, parking lots, and homes. The results are inadequate ground water supplies and further disruption of the ecological system.

The protection of wildlife resources for nature study, sport hunting, and biological reasons is heavily dependent on the existence of natural areas. Specific kinds of natural habitats are required by various types of wildlife; a prime goal of a comprehensive planning program must be the preservation of this wildlife and of its natural habitat for the enjoyment of present and future generations.

Man-made elements and resources which are significant to man's history also have inherent qualitative value. Many of these elements, such as canals, old ports, early powder and flour mills, wooden and iron bridges, and ruins of early industry, may provide a physical link with the industrialization of past eras. Similarly, the homes of statemen, inventors, artists, and others provide a link with the history of the State. This aspect is especially significant in Delaware due to its role in the revoluntionary history of the nation and Delaware's place as "The First State." These areas and other possessing prehistoric, scientific and architectural value are likely to be lost to the pressure of development unless they are specifically preserved for future generations.

Still other areas provide qualitative values in an even less measurable sense. These "breathing spaces" may be little more than a small wooded area or a linear park or a conserved stream valley. In each case, however, an opportunity is created whereby people can escape momentarily the momentum of daily life. In other cases, an opportunity exists to identify with a particular community or neighborhood when such spaces serve as separators. In still other cases, these spaces can serve in conjunction with another resource, natural or man-made, making that resource more enjoyable by emphasizing the visual qualities of that resource within its urban context.

However, beyond the physical aspects of a park, a forest, or another facility there is the need fo preserve the quality of the total environment. The setting for outdoor recreation includes not only the land but also the resources of the air and the water. The quality of the outdoor recreation experience is directly related to the population of the air or the water, the littering of the landscape, the obstruction of the view, and the relative attractiveness of the man-made improvements.

If the outdoor recreation experience is to be pleasant, the waters by which or in which water-related activities occur must be pure, the air surrounding the participant in any activity must be free of harmful or distracting pollutants, and the grounds on which the activity occurs must be free of trash and other discards of our urban society. Furthermore, the natural landscape must be visible rather than hidden by unregulated signs or camoflauged by poorly arranged factories, homes, or businesses. It is critical that in the desire to meet activity needs the broader scale relationships and needs must not be overlooked.

These qualitative values must be carried through the outdoor recreation plan in order that elements possessing such characteristics may be given proper recognition. The meeting of need only in a physical sense may "cost" society more in the long run than a less ambitious but more responsible desire to meet the total need, whether that need is physical or psychological or environmental.

It is worthy of note that this aspect of outdoor recreation was the underlying purpose of the National Environmental Policy Act of 1970. This act declares a national policy to be implemented through federal, state, and local actions to: encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere; and to enrich the understanding of the ecological systems and natural resources of the Nation. This act recognizes that man has too long and too casually abused the landscape and the environment.

The State of Delaware has also recognized this record as the 1970 "Future of the State" message of Governor Russell W. Peterson by a major committment to combat pollution of the environment and to protect, develop and enjoy the State's natural resources. This Outdoor Recreation Plan is dedicated to these vital goals.

AN OPEN SPACE SYSTEM

INTRODUCTION AND DELINEATION

Urbanization, a continuing facet of our modern industrialized society, each year consumes vast amounts of land which formerly were pasture, woods, farmland, or marsh habitat. The competition for space to accommodate this growth is of great importance given the limited, irreplaceable character of the commodity.

In one sense of the term, open space is all land, urban or rural, which has not been developed. This connotation is incorrect, however, because experience clearly shows that yesterday's "open space -- i.e., undeveloped land" is today's shopping center or subdivision. Open spaces should be a viable, planned element, not just land which has been inadvertently left undeveloped.

Open space is essential to man's physical and psychological well-being, to the protection of the ecological balance, to the conservation of significant natural resources, and to the creation of an efficient land use structure. Open spaces provide for recreational pursuits of both an active and passive nature at local, county, and regional scales. Open spaces add to the value of surrounding development, encourage tourism, and provide outlets for man's energy and an escape from urban tensions. These areas also protect water supplies, reduce the damages of unchecked runnoff, provide habitat for fish and wildlife, and protect geologic, botanic, and zoologic resources for the use and enjoyment of present and future generations. Finally, they allow for delineation of neighborhoods and communities, provide visual relief from the intensity of urban development, and help to separate and screen incompatible land uses.

The need for open space planning and action is imperative. It takes a minimum of 200 years to repair the loss of one inch of topsoil due to erosion. It takes 100 years to replace a forest. No amount of time or money could replace destroyed wetlands. Further, the loss of habitat can cause the loss or severe reduction in an entire species or mammals, fish, or birds. Aside from these ecological arguments, these wetlands are also part of our coastal scenery. Continued diking and filling and development will forever ruin that attractiveness.

The Comprehensive Outdoor Recreation Plan outlines an open space system to serve the residents of the State of Delaware to the year 2000. The proposed system is intended to provide contrast to urban development, to provide for outdoor recreational pursuits, to preserve natural and historic resources, and to give direction to future urban development. The open space system includes recreation facilities, conservation areas, forests, highways, agricultural land, flood plains, and other open land. Recreation facilities include local recreation areas, state parks and forests, facilities of the Division of Fish and Wildlife, roads, and roadside rest areas. Agricultural land in the system includes only those farming areas which are necessary to fulfill the goals of the system. Resource lands include State forests; wildlife refuges; borrow pits; and lakes, ponds, and flood plains. These resource lands also include, wherever possible, sites of significant prehistoric and geologic value as well as the locations of houses and other buildings providing historical insight and pleasure.

It is important at this point to indicate that this open space system does not preclude development. Rather, it indicates those areas where unregulated strip-type residential and other development would be seriously detrimental to the natural beauty, to long-range property values, and to the ecology. A case in point is the inland bays. Development of the type common to other shore areas, while profitable to the owners and in the short-run to the local government, would eventually lead to the loss of the natural beauty of these waterways -- one of the factors currently adding to their value and that of adjacent development. Further, this development would increase the amount of nutrients in the water due to increased runoff and private on-site sewage treatment as well as increased pollution from boats. These actions could result in a waterway filled with algae and sediment which would be unsafe to swim in, take fish or shellfish from, or use for water sports.

Development in the open space system should be clustered with considerable portions of the development left in its natural state. The benefits of this approach are shared by the county, the developers, and the owner. Valuable open spaces are preserved for the aesthetic and ecologic value of all, while the developer and the owner recognize a greater value from the development both in terms of the marketability of a "natural setting" and the reduction in road and utility costs attributable to clustering.

The open space system has been delineated in accordance with the goals, objectives, and policies outlined earlier and is based upon the following criteria:

1. Include areas of unique botanical, geological, ecological, historic, or prehistoric character when the loss of these areas would diminish the natural heritage.

2. Conserve river, bay, and interior wetlands where these are important for fish and wildlife or for protection of the ecological survival of water areas.

3. Protect the watersheds and banks of major rivers and other water sources.

4. Develop wherever possible lineal open spaces; where lineal systems are not practical, develop large unitary open spaces of sufficient size to add character to the area, protect the natural resource, and provide for recreational use.

5. Perpetuate the right of unrestricted public use of the State's valuable bay and ocean waters and shores.

The delineation included analysis of the extent of wetlands; the location and quality of woodlands; the water courses, ponds, and inland bays; soil characteristics; the distribution and quality of historic and prehistoric sites; and the projected pattern of urban development and transportation. This resource data was developed through contacts with various State agencies; analysis of geological survey maps; review of published State, county, and community studies and plans; and field inspection of present conservation and recreation facilities and areas which appear to have open space value.

It is designed to be implemented by State, county, local, and private acquisitions and developments in a manner which preserves the open space values, provides outdoor recreation, and results in a viable open space system.

WATER BODIES AND WETLANDS

Water, whether in a small stream or contained by an impoundment structure or part of an inland bay, constitutes the major element in the open space system. Water areas have a special scenic value not matched by many other natural resources. They also have recreational potential for fishing, water skiing, boating, swimming, and taking of shellfish. Finally, and most importantly, these areas are part of an ecological system essential for man's survival.

Directly related to the water areas are wetlands and the stream valleys. The areas immediately surrounding water are vital for reduction of flood risks, for protection of the waterways and for wildlife habitat. They also provide for recreational pursuits including hiking, picnicking, and nature study, as well as providing for the access necessary for enjoyment of the water areas.

The Plan proposed preservation, either through acquisition or regulations, of all water areas and their stream valleys and wetlands. The amount of land to be protected will vary depending on the character of the land and the nature of surrounding development. It may range from several hundred feet in urban areas to several miles in tidal marshes.

All significant streams in northern New Castle County have been included in the system because of the high degree of urbanization in this area. The major streams in this system are the White Clay Creek, Red Clay Creek, Brandywine Creek, Christiana River, and Chesapeake and Delaware Canal. The shoreline of the Delaware River has little open space value in this area although the River itself provides contrast to development in the City of Wilmington.

In lower New Castle County, the River and Bay shore should be preserved, particularly south of Port Penn. The streams in this area should be preserved as well as the shorelines of all major ponds. A significant area is formed south and east of Middletown by Silver Lake, Noxontown Pond, and the St. Andrews School property.

The entire Delaware Bay area in Kent County should be protected. The marshes in this area are extremely important to migrating waterfowl in the Atlantic Flyway. The marshes are valuable, not only in terms of waterfowl, but as part of a complete ecological system. The vegetation in the marshes, the waterfowl, and the many forms of aquatic life in the Bay are all interdependent. Changes in the marshes can directly affect the fish population. Preservation of the marsh areas involves limiting development to those uses not harmful to wildlife.

In Sussex County, all major streams leading into the Bay should be preserved as well as the shoreline of the inland bays, the Nanticoke River, and the numerous small ponds and lakes. Development along these water areas should be strictly controlled to guard against pollution, to aid in watershed management, and to provide recreational facilities.

WOODLANDS

Woodlands also play an important part in completing the ecological cycle, in providing for visual satisfaction, in sheltering wildlife, and in providing recreational potential. While it is not possible or necessarily desirable to preserve all forested areas, sufficient woodlands should be preserved to perpetuate these values. Without forest cover the land would not be very inviting for recreation, nor would it be of great value for the protection of wildlife and protection of water supplies.

The open space system encompasses large wooded tracts in all three counties for the above purposes and for forest management practices.

URBAN DEVELOPMENT

The open space system must reflect the present and expected pattern of urban development during the plan period, as one purpose of the open space system is to guide this growth and add to its value. The proposed system was developed with due consideration of urbanization as this could be determined from present land use and from various studies and plans. Where urban development was foreseeable, the system provides for the incorporation of all significant natural resources as well as certain man-made features in open space uses. Typical of these are many of the stream valley spaces in New Castle County and the preservation of the Nanticoke River and its tributaries in the lower part of the State.

Urban development also contributes to recreational needs, and the facilities necessary for meeting these needs should be part of the overall system. By careful location of facilities, linkages or green pathways may be developed to connect the recreational facility with its potential users. Further, the recreational area is in turn more satisfying and effective in its natural surrounding.

Urban development necessitates roadway systems and these can be made to complement an open space system and vice versa. At the intersections of these systems opportunities can be presented for roadside rest areas, picnic sites, and even boat launches. They could also serve as beginning points for hiking and other open space activities. Finally, the roadway system itself may provide for open space benefits if it provides a break with urban development, gives access to an area of scenic or recreational value, or is designed to allow for pleasure riding as well as traffic movement.

Roadways may have a negative environmenal impact if poorly planned, especially if they transverse areas of scenic or historic value or if their design fails to consider their aesthetic significance. Proper design and consideration of the environment, as called for in Public Law 89-670 which governs the Federal aid highway program, can preserve the natural beauty, can open rather than close scenic vistas, and can provide a visual link between segments of the open space system. Such design as evidenced on portions of I-95 in Wilmington can also improve the recreation experience by providing seating areas, play areas and even a swimming pool under the elevated roadway. If nothing else, appropriate landscaping along the roadway can introduce some sense of green spaces within an otherwise drab urban setting.

The State recognizes this relationship and provides for the continued coordination of highway planning, through the State Planning Office, with other state plans and programs including outdoor recreation and environmental protection.

Agricultural lands and other relatively open type uses may also be part of the total open space system. In certain areas farms have been included as a part of the planned open space in order to create continuous systems. The inclusion of these lands does not imply public acquisition. Rather, as long as the land is used for farm activities, it is compatible with the plan; however, it should be protected from loss by techniques such as acquisition of development rights and zoning.

Special type uses which have open space value include the Greater Wilmington Airport, the Dover Air Force Base, most educational complexes, the Georgetown Airport, the State's Mental Health facilities, and the various governmental complexes. An example of the relationship of these uses and the maximum enjoyment of the open space system can be found in Dover. Beginning with Delaware State College and Dover High School at the north end of Silver Lake, the system includes the lake, a city recreational area, a park as part of Dover Middle School and the Murphy School, the capital complex, and the new Highway Department Headquarters. Each of these uses gains from the open spaces created by the Lake and the St. Jones River. Likewise, the open space system is augmented by the green areas within these uses and by the visual interest and interruption of these more active uses. This kind of interrelation of open spaces and open uses allows for pursuit of solitude or for conduct of business in a variable, satisfying environment.

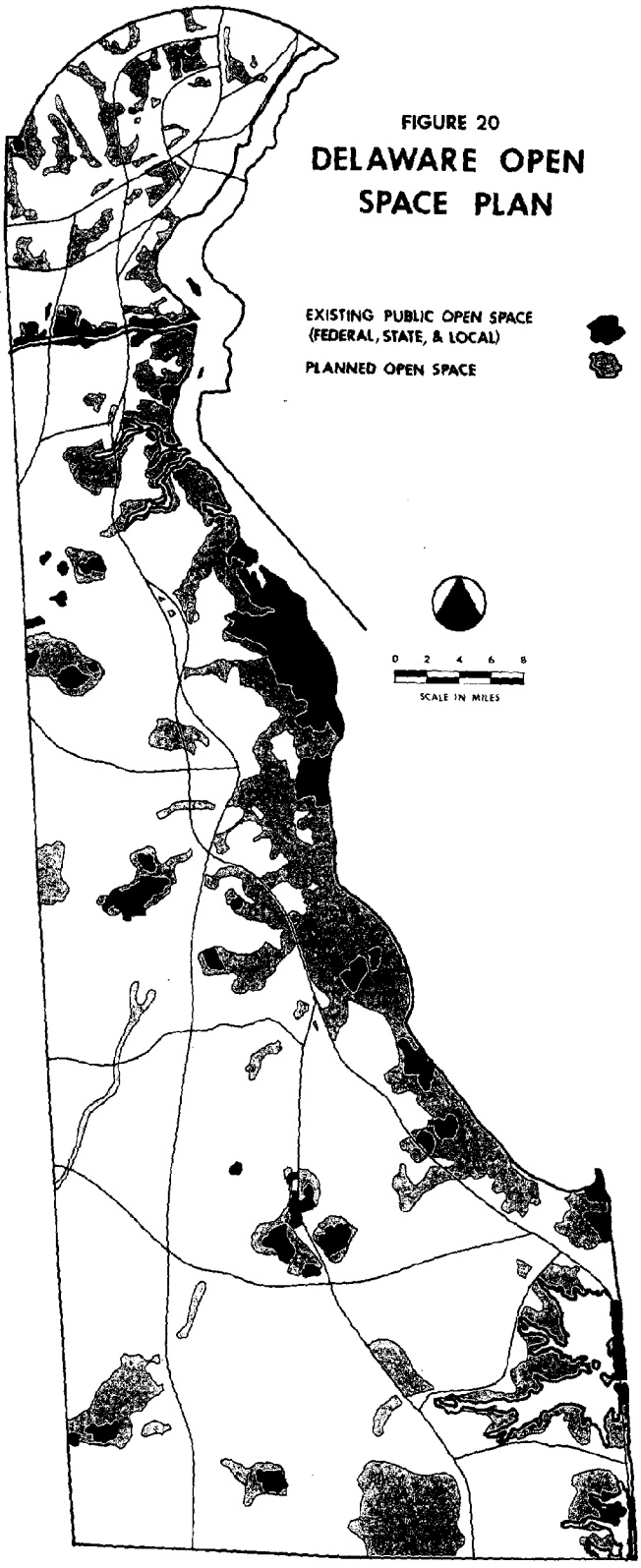


FIGURE 20
DELAWARE OPEN SPACE PLAN
EXISTING PUBLIC OPEN SPACE (FEDERAL, STATE, & LOCAL)
PLANNED OPEN SPACE
0 2 4 6 8
SCALE IN MILES

SPECIAL PROBLEMS

FLOODPLAINS, WETLANDS AND THE SHORE

Floods are a natural and normal occurrence. Typically, a stream or other watercourse will occupy a portion of its floodplain area every 2 or 3 years, with greater occupancy at less frequent intervals, and substantial occupancy at least once every 100 years. The extent of this occupancy depends on rainfall and on the extent of natural and man-made conditions in the floodplain. The natural conditions include soils, topography, drainage patterns and geology. The man-made conditions include various land uses, changes in drainage and runoff factors, and physical structures for crossing the watercourse.

Before the spread of urbanization such flooding was accepted as natural, and it was recognized that eventually the water would recede and the floodlands would be dry and useful again for rural pursuits. However, as urbanization proceeded, these lands were increasingly encroached upon for residential and other uses. Floodplains were filled in, paved over, or built on without regard to the periodic flood hazard and the inherent danger to life and property. Instead of adjusting the land uses permitted within floodplains to the needs of the watercourse, the practice quite commonly has been to permit all types of development in the floodplain thus bringing the natural needs of the streams into conflict with man.

An example of this conflict is noted in a recent study by the U.S. Corps of Engineers on the Christina River, which has exceeded its banks 59 times in the last 25 years. Yet, in a number of instances, development has occurred in floodplains between these floods with resultant damages to homes and improvements.

Floods have also occurred in other parts of the State, many in conjunction with storms along the shore. Many of these floods inundate communities located in from the coast. A storm in March of 1962 not only seriously damaged the coast, but also resulted in the flooding of towns more than eight miles inland. Most of the damages incurred in these towns were to structures and improvements built inappropriately in floodplains.

In addition to the inconvenience, hardship, danger, economic loss, and heartaches caused to occupants of the floodplain, floodwaters also cause disruption of utility and transportation services, health and safety hazards, damage to industries, businesses, residences, and agricultural activities, and other economic losses.

Yet, these flood prone areas could have been used for many outdoor recreational activities with little risk. Not only could they have been reserved for fishing, picnicking, and hiking, they also could have served as natural buffers between adjacent developments and provided visual relief from the surrounding urban development.

The same kinds of problems are noted in regard to the shore and its wetlands. Unregulated development of these areas has been largely detrimental to their natural character with repercussions on wildlife. The intrusion of man in an active sense interrupts, disturbs, and often destroys the wetlands and their ecology.

Wildlife of many varieties require undisturbed natural feeding, shelter, and procreation areas for their survival. Dredging, filling, grading, and clearing of wetlands and shore areas disturb stream and bay bottoms, destroy the natural setting, reduce the water quality, and increase the risk of serious flooding due to the lack of barrier dunes or the removal of floodplains. Many of these actions are detrimental to wildlife, most include a potential hazard to man, and all remove the natural setting from public enjoyment.

Large tidal marshes are evident along most of the Delaware Bay shore and substantial wetlands exist along the shores of the Rehoboth and Indian River Bays. Yet all these areas are in danger of being lost to intense land uses. Examples of this pressure are the filling and development of large wetland areas in the Little Assawoman Bay at Bethany Beach and Fenwick Island. Similar development has occurred in Rehoboth Bay and Indian River Bay.

Other activities have resulted in reduction of the natural dunes. In more than one instance, homes have been built on these dunes, and in other cases the dunes have been removed to give residential developments an unrestricted ocean view.

If such widespread practices are allowed to continue, then further destruction of the shoreline and the wetlands will occur. This will inevitably result in severe deterioration of the total ecology of the Delaware coastal area and will result in the loss of a vital section of the State's outdoor recreation system.

According to a 1965 survey of coastal wetlands conducted by the Fish and Wildlife Service of the U.S. Department of the Interior, in the decade 1954-1964, wetland losses in Delaware accounted for 4,560 acres, or approximately four percent of the total 120,000 acres of wetlands in existence in 1954. Twenty-six percent of the areas lost were rated as having high or moderate value for waterfowl. Other areas lost had high value for fish and marine life.

The major causes of wetland loss included deposit of spoil from harbor dredging projects; construction of bridges, roads, and parking; industrial and residential use; marina and dock construction; waste disposal; and mosquite control. Less than two percent of the total loss was used for recreational uses -- a rather poor record.

Losses were most concentrated in New Castle County where large scale road construction and industrialization are most evident, and in Sussex County where resort-oriented housing construction is significant. The impact of these losses in New Castle is important due to the rapid urbanization of the County and the shortage of suitable land for recreational and conservation purposes. The impact in Sussex County is largely felt from a wildlife and waterfowl standpoint. Much of the destroyed wetlands were formerly the breeding areas for a wide variety of fish and crustaceans, as well as nesting areas for waterfowl in the Atlantic Flyway. In Kent County the loss was relatively minimal; however, it should be noted that most of the protected wetlands are in this County.

According to the Division of Fish and Wildlife, the rate of loss in recent years has averaged about one percent per year or approximately 1,200 acres. At this rate, by the year 2000 another 30 percent of the coastal wetlands (36,000 acres) would be permanently lost. It should be apparent that preservation of these wetlands is a prime need in the Outdoor Recreation Plan.

The need for action in saving some of these wetlands resulted in a special study of Rehoboth, Indian River, and Assawoman Bays by a special task force of natural resources agencies and the Planning Office at the urging of Governor Russell W. Peterson. The study documents the need for preserving and enhancing Delaware's valuable inland bays. It includes sections on the geology of the area, biological characteristics of the bays, land use trends, and water quality. The final section of the report consists of recommendations on how the bays can best be protected from over-development in the future. Agencies participating in the study were the State Game and Fish Commission, State Parks Commission, State Planning Office, State Water and Air Resources Commission, University of Delaware Marine Laboratories, and the Delaware Geological Survey.

Significant findings of this important study included evidence of the biological decay of these resources, the extent of development pressure upon their shorelines, and the record of recent applications for dredging. The impact on these resources is graphically portrayed in the following maps, figures 21 and 22.

Specific recommendations of this study include:

1. The State should initiate a program to acquire strategic portions of the shorelines along the Rehoboth, Indian River and Assawoman Bays. As mentioned earlier, areas desirable for purchase have been delineated by the State's natural resource agencies, and methods of financing such acquisitions are being studied The State should also encourage private resource preservation groups to acquire land in the bay areas.

2. Legislation should be prepared immediately by the Department of Natural Resources and Environmental Control, in conjunction with the State Planning Office and affected agencies, which would authorize State control of private as well as public subaqueous lands. Such legislation should quarantee just compensation to any landowner restricted in the use of his land.

3. An immediate moratorium should be declared on the State's plan to dredge the creek bottoms in the bay areas, until more of the effects on the total ecology can be determined.

4. The Sussex County Levy Court should adopt the land development controls contained in the zoning ordinance being prepared by the State Planning Office. This would ensure limited construction in the danger zone surrounding the bays, where over-pumping of wells could result in salt-water encroachment. It would also preserve geologic features such as dune lines, which hinder erosion. In addition, the regulations of the Department of Natural Resources and Environmental Control governing spacing of septic tanks should be enforced to control contamination of ground water.

5. A study should be conducted to determine the effects of siltation resulting from drainage ditches.

6. The Sussex County Levy Court should continue its efforts to institute regional sewage treatment plants. Additional sanitary districts similar to that established in the Dewey Beach-Lewes area should be established, in order to provide the County with a coordinated system for protecting its natural water resources.

7. A salt-water fishing license for both fin fish and shellfish should be established, with appropriate enforcement procedures. Such a license would help pay for the maintenance and management of our aquatic resources.

8. Present conflicting laws pertaining to fishing in tidal waters of Delaware should be replaced with regulations based on sound management practices.

9. A Marine Fisheries Unit should be created within the State conservation agency. The functions of this unit would include periodic inventory of stocks of fin fish and shellfish, issuance of licenses and permits, and enforcement of marine laws.

FIGURE 21

REHOBOTH INDIAN RIVER & ASSAWOMAN BAY 1938

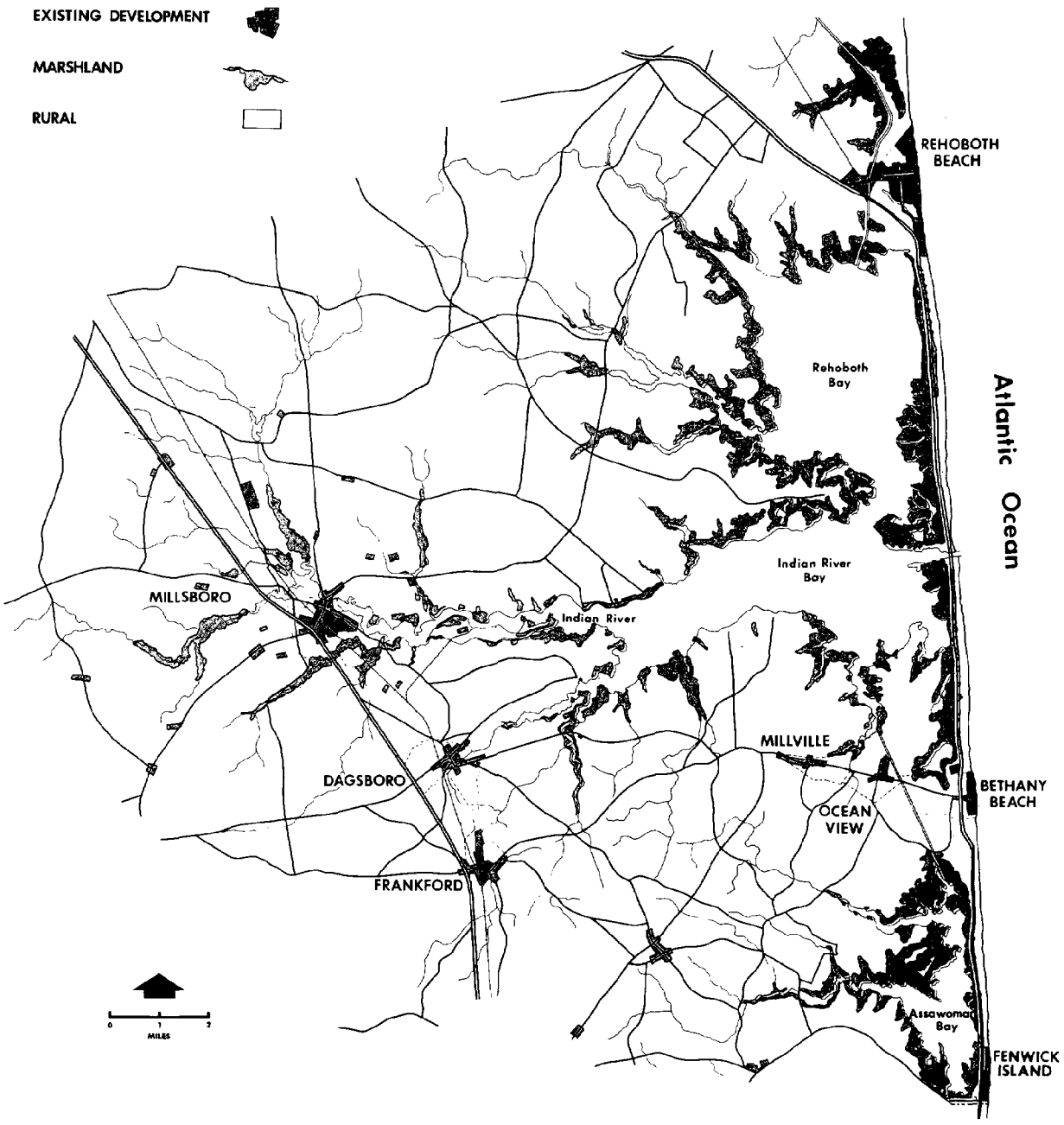
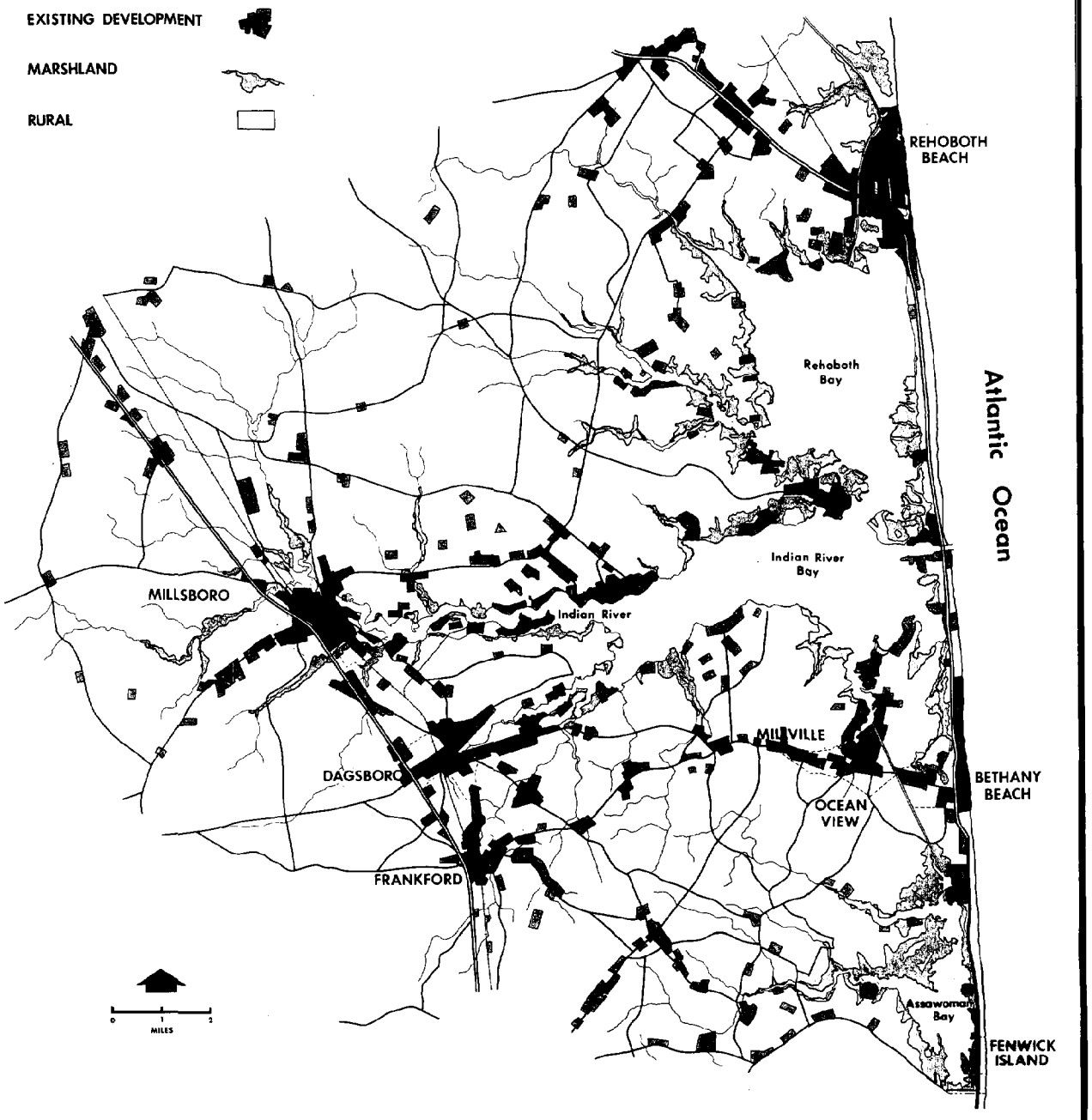


FIGURE 22

REHOBOTH INDIAN RIVER & ASSAWOMAN BAY 1969



POLLUTION, WASTE DISPOSAL AND RELATED PROBLEMS

As was noted in the introduction to this section, the outdoor recreation experience takes place in the total environment. Only if each facility were to be located in a closed eco-system with its own atmosphere and hydrologic cycle could the broad picture be ignored. Pollution of the water has already taken a toll of the outdoor recreation potential. The Delaware River north of Woodland Beach is polluted although swimming still occurs with possible health hazards. Major portions of the Rehoboth and Indian River bays are closed to shellfishing due to pollution. Many of the impounded waters in the State are of marginal quality due to pollution or siltation. Surface discoloration on the Delaware River due to the release of oil from vessels and the surrounding refineries is a common occurrence. Overflows from combined storm and sanitary sewerage systems, and from improperly functioning or inadequate systems, result in a discharge of fecal matter and other offensive solids into streams and rivers. Intrusion of salt water from the bay into the Delaware River and into domestic water supplies along the shore, caused by the increased consumption during periods of extended low flow, is becoming more common. In each case the outdoor recreation experience is significantly reduced, and in the worst cases the natural resources are no longer available for any use. There are fewer fish and less wildlife for fishing and hunting. Commercial fishing is further impaired. The tidal marshes and wetlands produce less nutrients for aquatic life. More and more water is pumped from deep wells lowering the water table and inviting saline encroachment. Evidence of these effects can be seen in the following cases.

Water and air pollution can have a very harmful effect on fish and wildlife and their recreational potential. Water pollution, in particular, is a growing problem since it often produces a lethal environment for fish and other aquatic life. In some cases the pollutants are not deadly, but make the seafood unfit from human consumption.

The Delaware Bay, the State's primary water resource areas, is subject to various pollutants such as industrial chemical wastes, oil from mosquito ditches, waste oil from steamships, sewage, detergents, insecticides and herbicides.[24] The DDT level found in the flesh of white perch from the Delaware Bay is reported to be the highest recorded in the United States. Changes in some forms of acquatic life, vis., shellfish, are thought to be a partial result of water pollution.

The impact of this pollution is critical for man. The chemicals which lodge in these marine species are transferred to higher forms of life including man. Increasing concentrations in many may affect the chemical balance of the body eventually affecting digestion, nutrition and reproduction.

In recent years there has been a large decrease in the number of oysters and blue crabs in the bay. While much of this decrease is attributable to the "MSX" disease, it is suspected that pollutants, some of which are known to be fatal when accumulated in small quantities in the flesh of shellfish, are a contributing factor. Since 1958, when the MSX blight was recorded, the commercial value of the oysters and blue crabs from the Delaware Bay has declined from over $2,000,000 per year to about $226,000 per year in 1966, according to the Division of Fish and Wildlife.

The oyster harvest has also been decreasing in the United States as a whole. During the last half century there has been a decrease nationwide of roughly 50 percent. This decline has been attributed to pollution resulting from population growth and accompanying industrialization.[25]

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[24]Carl N. Shuster, Jr., A Biological Evaluation of the Delaware River Estuary, Information Series, Publication No. 3, University of Delaware, Marine Laboratories, 1959, P. 46.

[25] Shuster, A Biological Evaluation of the Delaware River Estuary, P. 46.

A more serious water pollution problem exists in the upper part of the Delaware River. A comprehensive study of pollution in the area has been conducted by the Federal Water Pollution Control Administration, Department of the Interior. The study area used in this case stretched from Trenton, New Jersey to to Liston Point, Delaware. The study findings revealed a sharp decline in the fin fish harvest during the first half of this century. From 1885 until 1900 the annual catch by 4,000 fishermen was approximately 25 million pounds, valued at nearly $4,500,000 at today's prices. Coversely, the annual harvest by 1920 was only 1.5 million pounds; by 1966 the annual harvest was only about 80,000 pounds, worth approximately $14,000.[26]

The specific reasons for the large decrease in estuarine fish are unknown; however, it is believed that a major factor is poor water quality resulting from industrial and municipal waste discharge into the estuary. Other possible factors are improper fisheries management, introduction of predatory fish species into the upper river, and siltation from river dredging operations, etc., which covers spawning areas.

The extent of the pollution problem can be illustrated by Figure 23 which depicts the closures of certain water areas to shellfishing due to pollution.

Air pollution, while having a less severe record, also reduces the quality of the recreational experience. Until recent years, an industrial activity located near a State park and a resort community markedly affected the odor level in the vicinity. In the northern portion of the State a large area of considerable wildlife and scenic value is continuously shrouded by the discharge of a petrochemical complex and a large electric plant. The increase in numbers of motor vehicles without smoke control devices has added pollution to areas located anywhere near to congested highways. Smoke emmissions from formerly unregulated outdoor burning and from inefficient home heating units produce a layer of smoke cover over many communities.

All aspects of environmental intrusion are of concern to the Governor of Delaware. He devoted a major portion of his recent State of the State message to the controls that are to be implemented over the next five years. One of the first departments to be formed under the re-organization of State government was the Department of Natural Resources and Environmental Control, which represents a combined effort of all natural resource agencies towards achieving a more desirable condition.

Initial efforts have begun to collect the necessary data to formulate overall policy and programs, and to correct some of the more serious problems. Studies are underway to provide more complete information on the shellfish problem and its relationship to pollution. Other studies, including the study of the inland bay estuaries mentioned elsewhere in this report, have been completed in response to the pollution problem. Within the last year regional sewage systems have been analyzed and recommendations have been offered for establishing the sewer districts and implementing construction.

The solution to the pollution problem will not come easily or cheaply. The action program of this plan indicates the variety of studies currently underway and those proposed. From these will come the data and from the data will come regulations, acquisition programs, development policies, and management practices to ensure the protection of Delaware's environmental resources for all potential uses, while there are still resources to protect.

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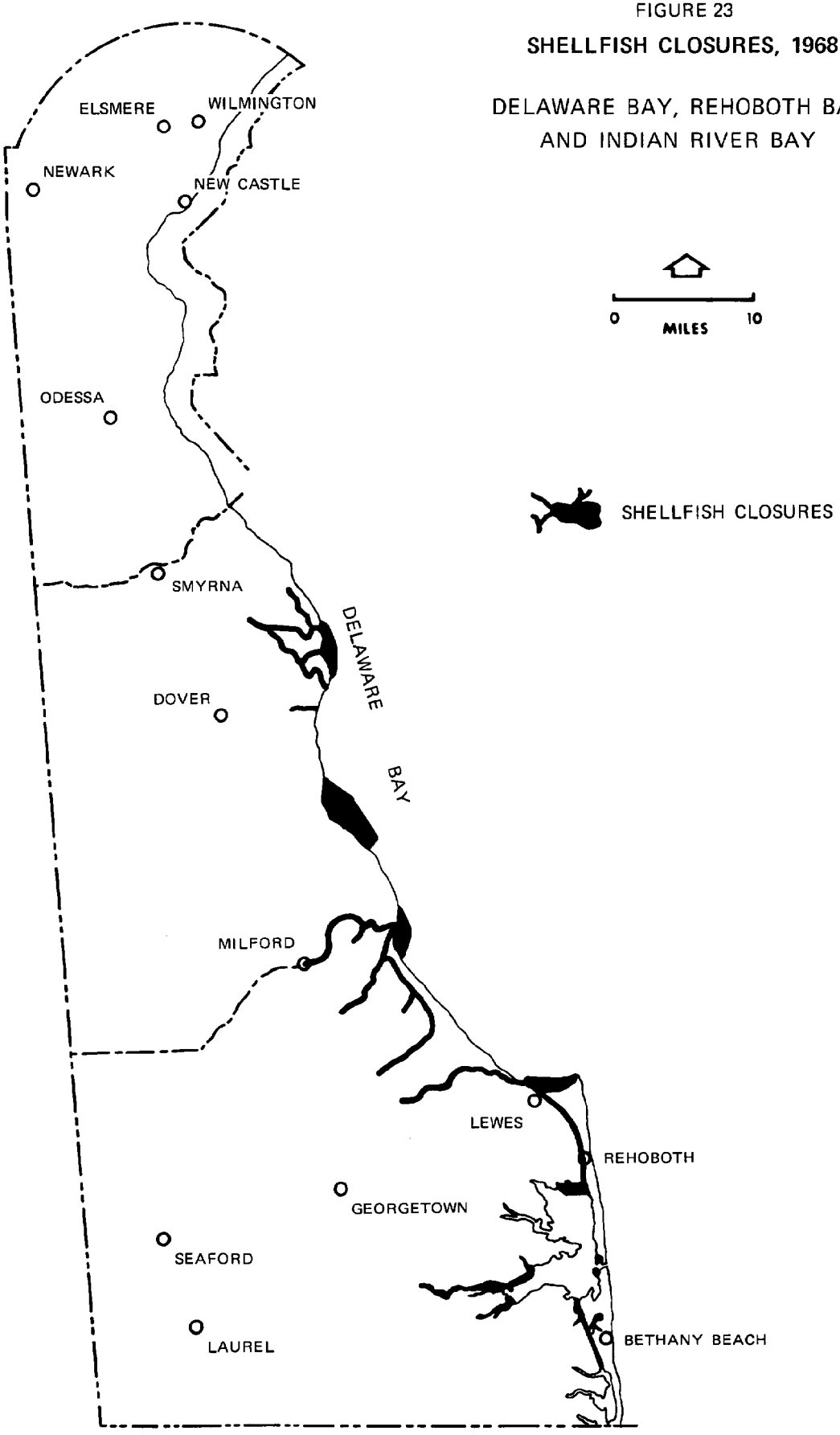
26 Federal Water Pollution Control Administration, Delaware Estuary Comprehensive Study, 1966, P. 50.

FIGURE 23

SHELLFISH CLOSURES, 1968

DELAWARE BAY, REHOBOTH BAY
AND INDIAN RIVER BAY



THE RECREATION NEEDS OF URBAN RESIDENTS

As much of the Nation's population continues to be concentrated in increasingly urban areas the amount of space for outdoor recreation too frequently is lost to the rush for more dwellings, more roads, more commercial and industrial enterprises, and more public serivces and facilities. The most urgent recreation needs, those closest to the concentration of residences, are most poorly accommodated because of past development patterns, the competition for lands for all uses, the strain on local finances to meet the rapidly growing needs, and the prohibitive costs of acquiring recreational lands in the heart of the urban setting.

With the continued flight to the suburbs of the middle and upper income, and usually white, residents the most urban areas become the home of the poor, the aged, and the social-disadvantaged. Yet these most deprived urban residents are almost entirely dependent upon public recreation facilities while a wide variety of public and private facilities are readily available to the more affluent suburbanite. Further, these same groups, because of limitations of income and education, often need to be informed of both the facilities that are available and the benefits to be derived from emjoying these facilities.

Acreage in the terms of number and size of the facilities is not enough. As the National League of Cities notes in their study or recreation in the nation's cities "the simple fact remains that in all major cities large numbers of inhabitants do not have access to public recreational facilities because the parks are not where the people are."[27]

The problem is not as acute in Delaware as in many other areas due to the character of the urban portion of the State (i.e., relatively low density) and the presence of on-going park and recreation programs in Wilmington and the urban areas of New Castle County. Nevertheless, in 1960, 87 percent of the Wilmington-New Castle County portion of Delaware was classified as urban, with New Castle County being one of the fastest growing counties in the Nation and showing little signs of a slow-down. Obviously this growth will place greater burdens on existing recreational areas and on the opportunities to obtain additional areas. While the County parks program has resulted in 83 areas as of July, 1969, with others being added as funds permit, considerably more evaluation is necessary to determine the proper role of State facilities and programs in meeting urban needs, especially in such areas as the facilities to be provided in urban-serving areas, the development of State-wide rivers and trails systems, and the relationship between proposed facilities, potential users, and the availability of public transportation.

A number of factors affect the type and quantity of facilities needed in the urban area. These include the characteristics of the population, the geographic location of the urban area, the attitudes and interests of the residents, the nature and extent of crime and social unrest, the degree of citizen involvement, and the structuring of the careful attention in the development of a plan which properly reflects urban needs. Even if the parks were where the people are, they would serve little value if they do not reflect the local needs.

A number of recent governmental changes and anticipated changes prevent this Outdoor Recreation Plan from adequately exploring the urban need. First, the State has just recently recognized the full range of recreation needs of local governments by the establishment of a local park development fund to complete the State programs of local recreation assistance. Since this fund was only created by the 1970 Legislature, considerable work is necessary to implement it ans to assess its impact. Further, the State has recently reorganized its Natural Resources agencies into one department which will facilitate a unified State approach rather than a fragmented approach through a number of independent agencies.

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[27] National League of Cities, "Recreation in the Nation's Cities - Problems and Approaches," December, 1968.

This reorganization, which encompasses all State functions, also creates a Department of Transportation which will have the responsibility for all forms of transportation including both highways and mass transit. The agency will be better able to evaluate public transportation needs and relate these to the State's and the local recreation plans.

In addition to these changes a merger of the New Castle County and City of Wilmington Parks and Recreation agencies has recently been proposed. This merger, if implemented, will improve the local ability to plan for, acquire, and develop facilities to serve the urban and suburban need. This consolidation would also improve the ability for the State and local governments to work together.

With these constraints, this plan will recommend a study of urban recreation needs as part of the first annual update of the plan. This study will assess the nature of urban needs, determine the types and magnitude of facilities necessary, develop an urban-oriented action program, and outline a program for State and local facility acquisition, development and programming to serve the urban residents. This study should provide the basis for a responsive, innovative approach to urban recreation needs and a framework for public and private action.

LOSS OF PRIVATE RECREATION LANDS

Private lands that have long been used by the public for hunting and fishing are being withdrawn from public use at an alarming rate. The impact of the loss of these lands is compounded by the steady increase in the number of hunters and fishermen.

An estimated 75% of the farmland in New Castle County and northern Kent County is posted with "No Hunting or Trespassing" signs. In Sussex County and southern Kent County land is "posted" to a somewhat lesser degree, however, some of these lands are open to hunting if permission is asked, and respect for the property is guaranteed.

In addition to privately restricted lands, there are extensive lumber company holdings, especially in Sussex County, that are closed to hunting. Because of the obvious fire hazards during the hunting season, the "no hunting" regulations are rigidly enforced.

Lands are also being withdrawn from public use because of a relatively new occurrence -- the leasing of hunting rights. Although the leasing of areas for waterfowl hunting has been going on for several years, leasing for upland game hunting is in its infancy. Several hunters now form a group of possibly ten people and buy the exclusive rights to hunt on a farm, usually paying a specified amount per acre. The fishing rights to some ponds are also sold on a yearly basis.

Other previously public game land is removed from public use every year by development practices, such as new highways, residential development, and industrial expansion. Town annexations take hunting land, since hunting is usually banned within town limits, although the character of the land may be unchanged for years.

The reduction in the supply of private recreation land, open to public use, therefore, is caused by many factors. Principal reasons are the abuses of hunting privileges by some destructive and irresponsible outdoorsmen, the expansion of urban land uses, and the income-producing attraction to many landowners.

Possible solutions to this problem include the more obvious provision of State lands for these uses to offset those lands lost. Other solutions, however, could involve programs of assistance (technical or financial) to private landowners for wildlife development with one agreement that the facilities be available for reasonable public use, and stronger action at both State and Local levels to implement land development controls which protect the best wildlife habitat.

Examples of these controls would be flood plain zoning, conservation zones, and open space reservations in subdivision regulations. Finally, a public relations program could be used to encourage private landowners to open their lands to reasonable use, to foster municipal review of laws which may unnecessarily restrict the recreational use of newly annexed or other undeveloped land in corporate limits, and to convince owners of large timber areas to allow public access. Whether these approaches would provide some solution to the loss of private lands is, at this point, purely speculation, however, the problem will definitely persist if no solution is attempted, no matter how speculative that approach.

THE HANDICAPPED

Outdoor recreation facilities should be available for all persons. Handicapped persons often are excluded from participation in outdoor recreation activities by the failure of park planners and others to include facilities designed for their access. In all, too many cases throughout the nation parking areas are located too far from the active area, steps instead of ramps negotiate grade differences, sanitary facilities are not useable, hand rails and safety rails are non-existent or improperly located, halls and other passageways are too narrow for wheelchairs and persons on crutches, or other barriers are present which restrict use. The plan must assure that facilities are designed to overcome the previous record of neglect in both public and private facilities.

Handicapped persons include those of all ages and sexes suffering from some physical or psychological disability. These disabilities can range from the general infirmities of age to the severe effects of major diseases such as muscular dystrophy or cerebral palsy. Other disabilities may affect visual ability or the level of intellectual functioning.

According to a recent publication of the Bureau of Outdoor Recreation,[28] the effects of these disabilities include:

1. Limitation in walking --

   a. difficulty in walking distances because of muscle weakness due to disease or age;

   b. difficulty in walking on non-level and non-smooth surfaces because of 1) reliance upon braces, crutches, or prosthesis; 2) cardiac, pulmonary or neurological problems which affect strength, flexibility, and coordination; 3) sensory disability affecting balance; or 4) impairment of joints;

   c. inability to walk but ability to propel oneself in a wheelchair on level and certain graded surfaces;

   d. inability to propel a wheelchair because of extensive disability, thus requiring an attendant.

2. Limitations in seeing and/or hearing --

   a. difficulty in seeing and/or hearing warnings and safety hazards because of limited vision or audition due to disability or age;

   b. inability to see and/or hear warnings and safety hazards because of extensive disability.

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28 "Outdoor Recreation Planning for the Handicapped," Bureau of Outdoor Recreation, U.S.D.I., Washington, D.C., April, 1967

3. Limitation in the use of hands and arms --

   a. difficulty in opening gates or doors, manipulating equipment, etc., because of muscle and joint weakness, or because of the necessity to manipulate crutches, a cane, or a wheelchair.

   b. inability to open gates or doors, etc., because of extensive disability in the muscles and joints of the hands and arms.

4. Limitation in understanding information, directions, and warnings --

   a. difficulty in reading printed signs because of partial sight or intellectual impairment;

   b. inability to read printed signs because of blindness or severe intellectual impairment.

The importance of special consideration of handicapped needs, from the standpoint of this project, is that facility design should provide for use by these people. Usually only minor changes in existing concepts will allow handicapped persons the opportunity to participate in or at least observe outdoor recreation activities.

The typical designs presented in the Plan has included features to make their use more universal. An example is the wooden beach access included in the Ocean Access Areas. This feature, built with gentle gradients and with a rough, non-slip surface, allows the handicapped to traverse loose sand to the water's edge. Another example is the inclusion of ramps on the boat launch piers so that ambulatory and wheelchair-ridden persons can get to the side of a boat. Access rails on the lower pier also aid in the use of these facilities as these could extend out from the pier over the rail of a boat in the loading area. Other examples include designation of trails in other parks which are wide, fairly level, hard-surfaced, and include a hand rail. These allow the handicapped to enjoy some degree of pleasure from nature study and sightseeing.

Another example is the design of facilities at Trap Pond State Park. First, a special access road is available to allow vehicles transporting handicapped persons to drive up to the picnic areas rather than park in the normal parking lot. Second, a driveway and paved area allows the handicapped to enter and use the concession and sanitary building. Third, the parking lot is level with the surrounding ground and grass areas so that no barrier exists for movement between these areas. Finally, a newly constructed sidewalk connects the concession-sanitary building and its access to the beach area. This sidewalk and the surrounding beach are also level so as not to present barriers. The sidewalk is also wise enough to allow easy passage of both handicapped and non-handicapped persons.

Trap Pond State Park is widely used for outdoor recreation for the handicapped as both State agencies and private organizations appreciate its good design, variety of opportunities, and ease of use.

The Plan strongly recommends that present efforts be extended to make as many of the parks useable for the handicapped as is practical. Final designs should include specially designed sanitary facilities, ramps to supplement steps where grades require these, tables and benches which can be used by persons with restricted mobility, and walks, paths, and piers of sufficient width to allow passage of wheelchairs.

Beyond the scope of this project but still most important, local levels of government and program operating levels of the State government should evaluate their programs and resources with the view of including facilities wherever practical for the use of the handicapped.

It is hoped that this plan and a careful awareness of these special needs will help to meet the goal established by this project of providing outdoor recreational opportunities for all of Delaware's residents and visitors.

WATERSHED DRAINAGE PROJECTS AND RECREATIONAL POTENTIAL

The Division of Soil and Water Conservation is the primary agency charged with development and operation of watershed protection, flood control, and soil conservation programs including creation and maintenance of drainage ways, prevention of sedimentation and siltation of major water channels, and the application of sound soil and water conservation practices within the soil conservation districts of the State. In the course of its function, considerable ditching of minor water courses is necessary as is dredging of the bottoms of a number of major channels. The impact of dredging, whether public or private, has been considered in another special analysis of this plan; however, the impact of the ditching program also needs examination.

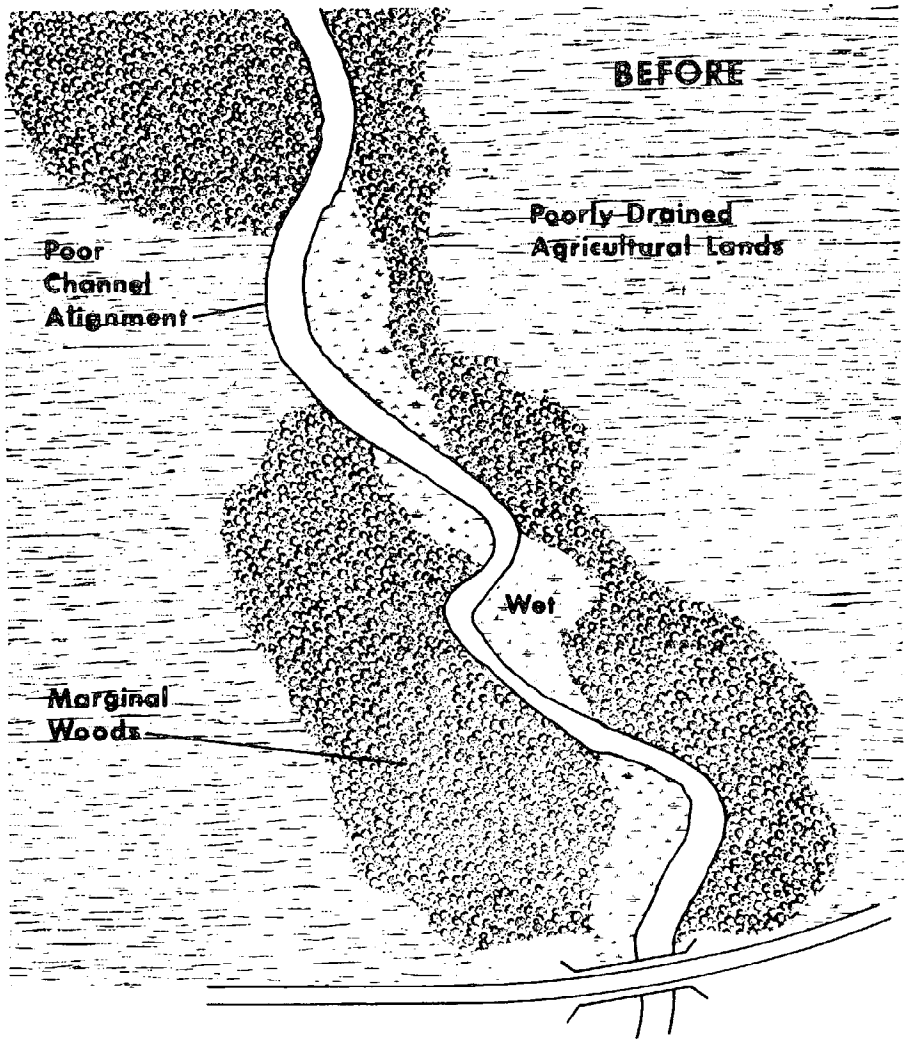
Essentially, the ditching program is intended to improve natural drainage and thereby increase the agricultural value of the lands so drained. In the process of this operation a new channel is constructed or an old channel is reconstructed which necessitates a relatively large amount of clearing of brush and trees. Closely related to this action is a general tendency for the private landowner benefitted by the improved drainage to clear once wet brush and wooded areas for croplands. The combined impact is an initial marked reduction in woodlands and a loss of wildlife habitat. While some habitat is later re-established by natural growth in the next growing season, the process of ditching is destructive, the recovery is slow, and the character of the re-established habitat is much different from the original habitat.

While the immediate results may not be attractive, the ditching is necessary to the realization of agricultural or other entensive use of the land and to enable proper flood control practices, although the need for the additional agricultural land may not be justified. The concern arises from the manner in which the ditching is done and the unrealized recreation potential these ditches possess.

In the first instance, available funds have in the past dictated the least costly approach, which is also the least attractive. The present process involves clearance of land on both sides of the ditch sufficient for the operation of a drag line, for disposal of the material, and for the access roadways for equipment movement. In some cases the area cleared is 150-220 feet wide. (Figures 24 and 25).

Where this clearing is done on State lands the original purpose of those lands may be seriously violated, for example, the removal of up to one acre of forest cover per each 200-210 feet of channel. The plan strongly recommends that those responsible for funding the ditch projects earnestly consider the availability of other techniques, at least those which more efficiently utilize the wood resource such as full "knockdown" of the fallen timber into fire logs and clean removal of the material to more suitable locations for landfill purposes.

The lands necessary for this channel improvement possess generally unrealized outdoor recreation potential. In most cases the channel is of a length suitable for hiking or bicycle riding and in some cases the length is sufficient for horseback use. Since the channels follow natural drainage areas and not roads, they would allow access to parts of the countryside not otherwise visible. Further, most drainage areas are low-lying and most of the surroundings are generally woodland and stream-edge habitat. While much of this is disturbed during ditch construction, the general character of the area would offer an unusual experience, especially if more refined ditch methods were utilized.



TYPICAL DRAINAGE PROJECT:
BEFORE CONSTRUCTION

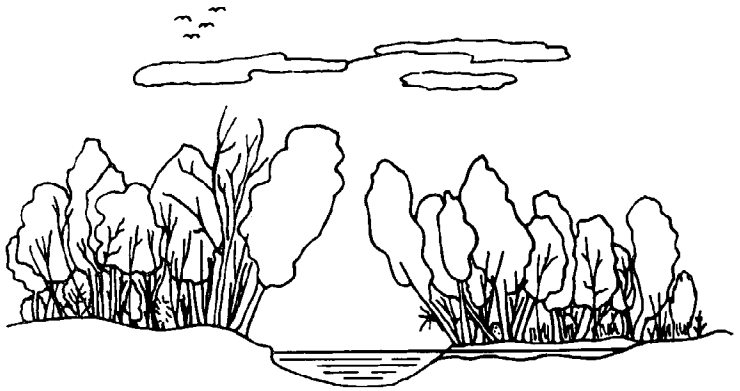
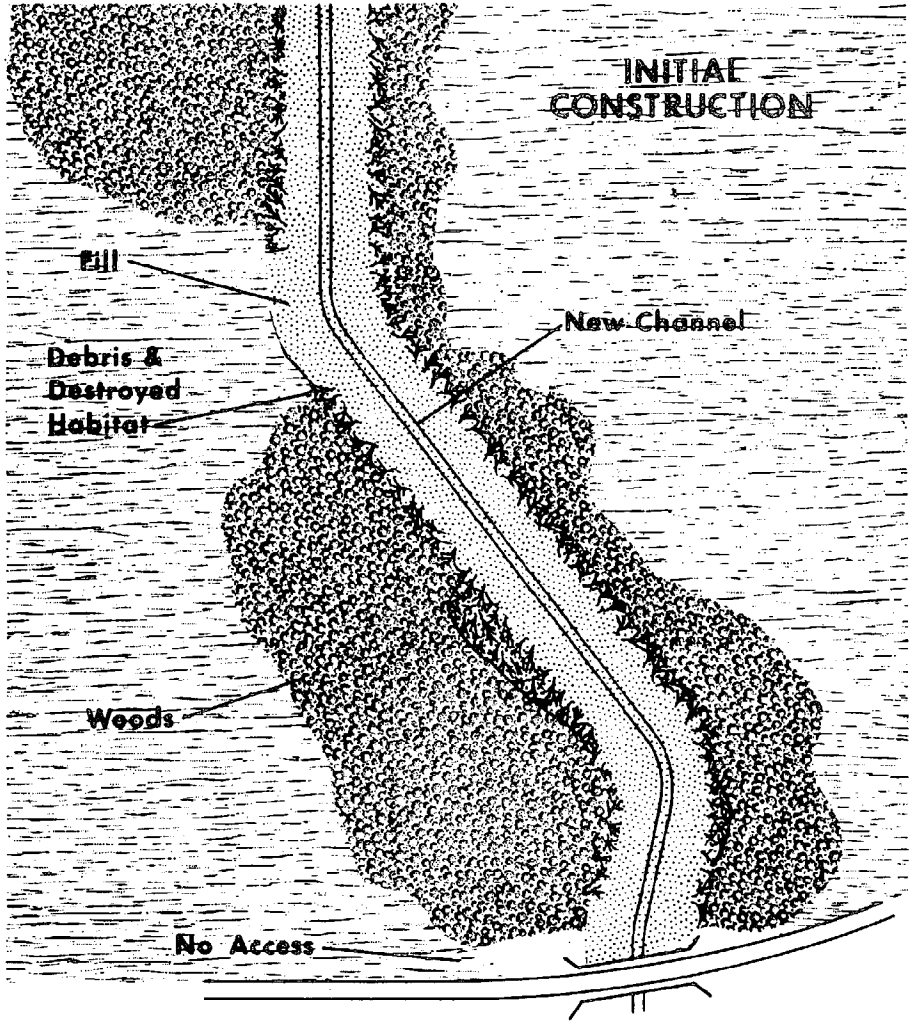


FIGURE 24



TYPICAL DRAINAGE PROJECT:
AFTER INITIAL CLEARANCE,
DITCHING AND FILLING

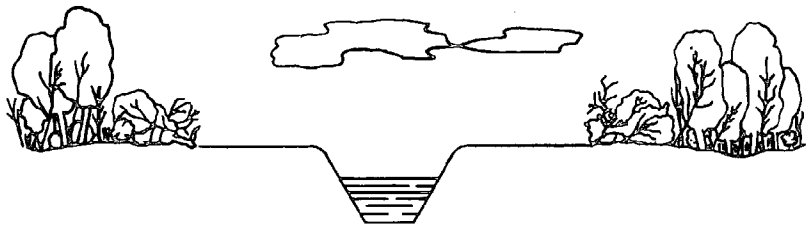


FIGURE 25

In larger ditching projects the possibility may also exist for canoe or small boat use of the watercourse itself. This use could be combined with ditch bank improvements and joint use facilities could serve both. Development of the ditch could include parking at points of contact of the ditch and a public road, picnic areas at both the parking area and at interior locations, facilities for launching a canoe or small boat where possible, designated fishing areas, and various markers for nature study or other trails.

One problem affecting the use of the ditch and its access facilities is the nature of the tax ditch company, its organization, and its authority. While the tax ditch company becomes a legal subdivision of the State and can exercise a broad range of powers as described in Title 7, Chapter 41, of annotated Delaware Code, the title to the right-of-way for the ditch remains with the individual property owner. Further, the tax ditch company, the ditch manager, and other agents of the company can only enter on the right-of-way for purposes of construction and maintenance of the ditch. No other purposes are included in the legal rights of the company or in the court order which creates it.

Recreational uses, therefore, would be possible only upon agreement of each property owner to allow public access for such uses. Only if the land or the right of public access was acquired from the property owner would the areas be available for recreation use. While the purchase of these rights for public use would probably not be unpopular in areas of little agricultural potential, the acquisition would most likely be opposed when the ditch banks and right-of-ways traverse croplands.

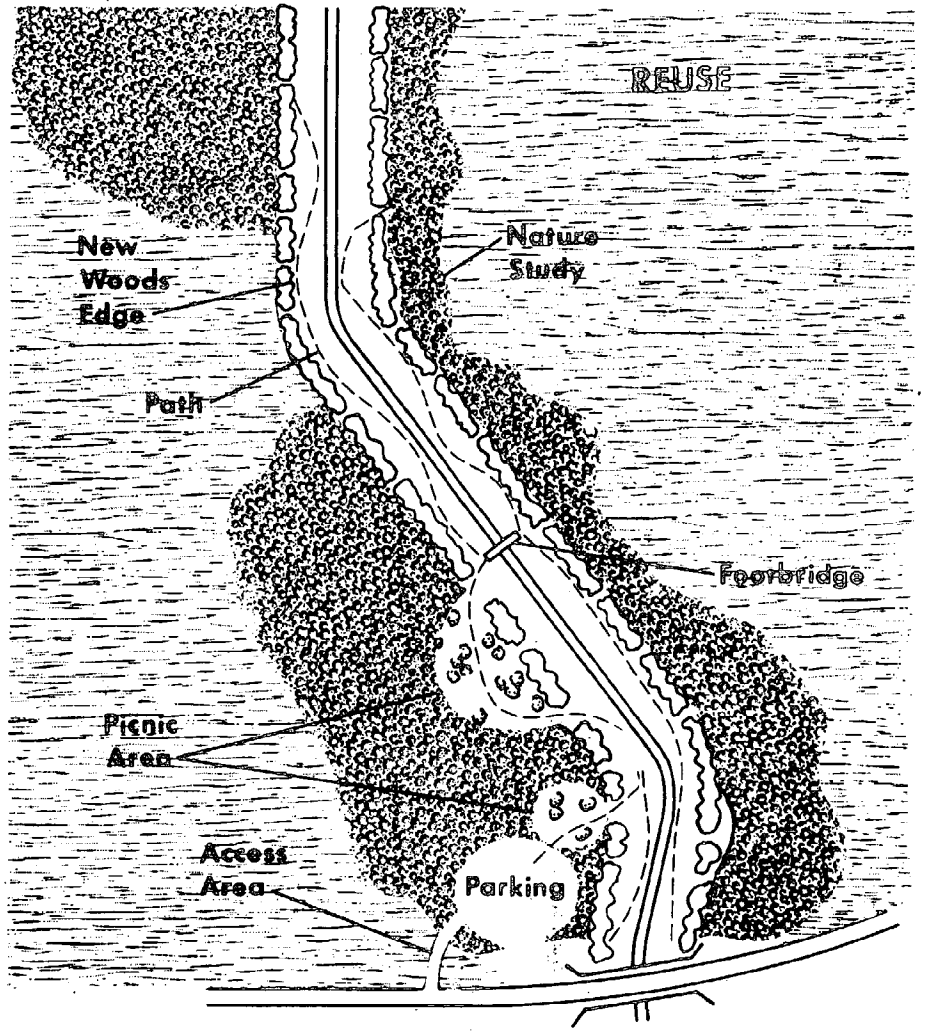
A detailed evaluation of this potential was not possible at this time; however, it is recommended that each ditch project, existing and proposed, be reviewed by the Department of Natural Resources in regard to recreational use as well as a review of the ecological impact of the proposal on the wetlands. This review should be automatic whenever State lands are involved along the ditch and a matter of procedure for all major projects. The analysis should focus on such factors as public roads, proximity to State or other public lands, nature of the terrain and cover, location relative to urban concentration and potential for recreational or other use of both the right-of-way and the watercourse. A conceptual evaluation of the multiple use potential has been prepared as Figure 26 . This evaluation indicates the process from the original drainageway through the present reconstruction to a program of recreational development and wildlife habitat restoration.

The Outdoor Recreation Plan strongly recommends that reconcilation of the need for drainage improvement, the need for outdoor recreation facilities, and the shortcomings of the present ditching approach be given a high priority within the new Department of Natural Resources. The needs are clear. All that is necessary is a more realistic approach to funding and a more complete evaluation of potentials. An approach such as outlined in Figure 26 would seem in order with the Department of Natural Resources and Environmental Control working with the State Planning Office in each instance where State lands are involved.

LAND ASSEMBLY AND PROTECTION

Delaware's natural resource agencies have experienced little difficulty in the past in assembling the land necessary for their outdoor recreation facilities. This experience appears to indicate an interested public and responsive governmental programs, most significiant, given the constraints of the techniques that can be employed for assembly of these areas.

Land assembly for outdoor recreation purposes in Delaware is limited to fee simple acquisition at the State government level and further limited to negotiated purchases versus condemnation in most instances. Whether this favorable attitude toward government purchase will continue cannot be foreseen at this time; however, experience elsewhere and the increasing value of the highest priority areas suggests that some assembly difficulties could arise in the future. These could be especially serious in the protection of the most threatened resources.



TYPICAL DRAINAGE PROJECT:
RECREATIONAL REUSE CONSIDERATIONS

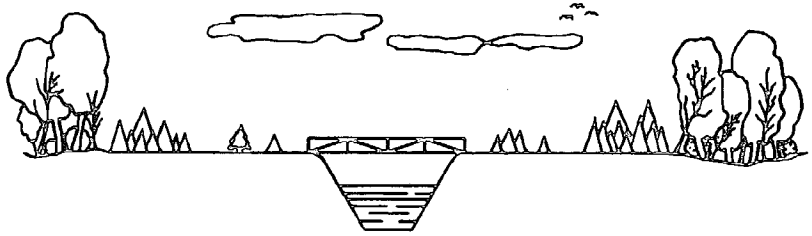


FIGURE 26

A more significant problem relates to the inability of the State to protect the areas desirable as open spaces, short of their acquisition. It is obvious that not all of the open space can or should be part of a State park or other State-owned area. Much of this open space can and should be left in private ownership and used for passive-type uses which complement State ownership and which also protect the resources, provide visual buffers, satisfy other open space functions, and aid the local economy.

The plan recommends that limited land control measures be adopted at the State level to preserve these open spaces. This recommendation was previously included in the Comprehensive Development Plan for Delaware.

Specifically, it has been suggested that the State adopt open space zoning at the State level as well as legislation authorizing purchase of open space easements and development rights. The implementation of open space zoning at the State level would provide a broad framework within which local zoning and land development could occur. The use of the approach would provide an additional guarantee that desirable open space areas would be protected and preserved in a manner consistent with State and local plans and policies. These approaches would allow for preservation of Delaware's agricultural, wildlife, and stream valley areas in accordance with the open spaces proposed in the Comprehensive Outdoor Recreation Plan. The ability to obtain less than fee simple interests would allow for the right of public access to these areas and also the inclusion of peripheral areas which do not meet the strict requirements of the conservation zone and which would not be feasible for fee simple ownership. In these cases, the State could acquire limited interests to preserve the area's character without the necessity of taking title.

County and municipal zoning and subdivision regulations would be free to control development within this broad classification. It should be noted, however, that the problem of land assembly and protection is compounded by another problem, that being the administrative and financial constraints on the local governments. The latter special problem was discussed in the preceding section.

The availability of additional land assembly and protection devices, given the special problems affecting the local governments, would allow greater flexibility at the State level, provide for establishment of an open space system, and insure proper use of the agricultural and conservation areas while permitting urban development in accordance with local plans and needs.

LOCAL GOVERNMENTS

One very significant characteristic of the past and present outdoor recreation activity is its dominance by the State government. Only one county, New Castle, has an active parks and recreation program with the other two having considerably less developed interest. Kent County has recently established a parks and recreation committee and is moving toward the hiring of some professional staff, while Sussex County has to this date expressed little interest in the topic. In both of the latter cases, active participation in meeting the outdoor recreation need is not foreseeable in the near future.

The problem of responsibility is augmented by the lack of effective zoning and subdivision regulations in the lower two counties. These deficiencies complicate the creation and protection of a viable open space system as well as frustrate the fulfillment of highly local needs.

As a result, the State must assume considerable development and maintenance costs for recreation facilities, the need of whose users may be beyond the State's responsibilities.

It is highly desirable for counties to assume responsibility in the acquisition, development and maintenance of outdoor recreation programs which will serve local needs. Local planning and development, as opposed to state development, is more apt to consider and satisfy the preferences and needs of local people. The cost of operations and maintenance by local agencies would be substantially less for those areas which do not require the services of a full-time resident manager.

Fiscal and administrative constraints handicap all three counties and most municipalities at the present time and these constraints will persist for the immediate future as problems of sewer and water service and development control are tackled. The State has made efforts in the past to assist the localities in acquisition, and it is recommended that these efforts be continued. Additionally, funds are now available for development at the local level, and the various State natural resource agencies should actively participate as consultants to local governments in meeting their needs. As these governments become more capable of operating local recreation facilities, the State should consider transferring facilities which are local in character to local governments. In this way, State funds and personnel could be utilized on facilities which have regional, State-wide, or metropolitan significance.

DELAWARE
OUTDOOR RECREATION
PLAN

POLICIES FOR OUTDOOR RECREATION

As part of the program for the Outdoor Recreation Plan for Delaware, policy development meetings were held with State, county and local officials; State legislators; and other individuals. The purpose of these meetings was to allow an interchange of ideas and positions regarding the State's role in meeting outdoor recreation needs, the type of facilities required and their locations, the relative emphasis to be placed on meeting the needs, and other matters related to outdoor recreation planning, programming, and administration.

Based on these meetings and on further discussions and comments of the participants, the following policies emerged. Two levels of policy are presented as certain proposals seemed of broad-scale significance while others were more specific in nature.

BROAD POLICIES

1. The State's Outdoor Recreation System will be characterized by resource protection, thereby providing for nature-oriented experiences and activities.

This policy relates to the State's role in providing for outdoor recreation facilities. It specifies that the State shall concentrate on facilities which have regional significance and which are primarily for the purpose of protection and efficient use of natural resources. It also implies that the most urban-type facilities should be the responsibility of lower levels of government, although where feasible some of these local-sponsored projects might share land with the state facility. This does not imply, however, that the State's facilities will be less "active" than local facilities, only that the uses in the State area will occur in a natural emphasis. Further, the types of active uses may be different in the State facility as compared with the local facility.

2. The State will continue to expand its technical assistance to counties and municipalities for acquisition and development of local open space facilities. This role should include financing, planning, and development assistance with the State acting as professional consultant.

This policy and the first are directly related. The State recognizes the inability of the counties and the municipalities to fully meet their responsibility due to financial and administrative constraints. Therefore, the State adopts as a policy the creation and administration of funds, programs, and staffs to act as consultants to these jurisdictions in meeting their programs.

3. In order to maximize the effectiveness of limited financial and physical resources, action will be directed primarily at acquisition of those areas deemed important in the overall system rather than development of land in public ownership.

4. Acquisition of land and exercise of other controls over the inland bays and rivers, the State's wetlands, and areas necessary to complete "urban-serving parks" will be a first priority over all other acquisition and development actions.

Policies 3 and 4 recognize that action is necessary now to protect the State's remaining wetlands and waters from pollution, improper development, and the destruction of their ecology. The policies also recognize the limitations on the State's financial resources and the necessity of directing these to the areas of greatest need. Consequently, acquisition projects, especially where wetlands, water areas, or lands necessary to the proper development of an urban-serving facility are involved, will have first priority in the distribution of funds, followed by other acquisitions, and then by development. The best legacy this program can leave the next generation is the opportunity to develop the land this program preserves in open space. The plan recognizes, however, that initial development is necessary to serve present needs, especially that of persons residing in the urban portions of the State.

5. A Department of Natural Resources has been created to include all agencies, boards, commissions, and departments whose duties involve protection, development, use, or administration of natural resources. This department should be encouraged to develop in-house capability for program planning relatd to the funding, acquisition, and development of the State's natural resources in a manner consistent with proper Statewise Comprehensive Planning.

This policy recognizes the need for coordinated action by all agencies involved in open space planning, provision of outdoor recreation facilities, management and protection of fish and wildlife and their habitats, preservation of natural resources, and prevention of damages to these resources. It supports the merger of these agencies into a single department whose new structure could develop in-house management and program development capabilities for all merged units. This Department would be in a better position to work with the State Planning Office in establishing total State government priorities, in coordinating open space and recreation needs with comprehensive planning, and in submitting requests through the State Planning Office for funds and programs it must administer due to the need for an over-all comprehensive approach.

6. Development of outdoor recreation and open space systems and complexes shall be encouraged over the acquisition of small, scattered, and unrelated parcels. Particular emphasis shall be given to "filling-in" voids in present large State ownerships in order to make them more complete, useable units.

Scattered, small ownerships conflict with the purpose of natural resource protection and effective use as they usually are not sufficient to prevent incompatible land use activities on the adjacent areas. They are difficult to manage and increase the paperwork of inventory keeping. Furthermore, expansion of these areas, especially to accommodate a change or increase in the degree of use, is often difficult due to surrounding development. Development of larger complexes and open space systems will allow space for efficient use, will insure more complete resource protection, and will aid in the development of open space separators in and around urban concentrations.

7. The federal government shall be encouraged to continue their present primary role in Delaware, i.e., essentially concerned with navigation and with fish and wildlife management, and encouraged to coordinate recreational facilities with the State's program.

The federal governments's responsibility covers needs which exceed local and State jurisdictional boundaries. Included are the protection of migratory waterfowl, the protection of the ecology of the estuaries, and the maintenance of routes of interstate marine transportation. These areas are legitimate concerns of the federal government, however, recreational uses which can be generated as additional uses of these areas should be closely coordinated with the State's efforts in order to encourage multiple-use programming and avoid duplication and inefficiency.

SPECIFIC POLICIES

The following policies deal with a specific aspect of the open space and outdoor recreational system or its administration.

1. The State shall give priority to projects which serve the recreational needs of urban residents.

2. Because of the valuable ecological contribution of marsh wetlands, the State will continue its emphasis on preservation of these areas in their natural condition and limit the use of these areas in a manner consistent with proper fish and wildlife management.

3. Promotional activities directed toward the State's outdoor recreational facilities should emphasize those areas which are presently under-utilized and the new facilities to be provided, rather than the shore. In this way the economy of the entire State would benefit from diversified recreational experience while avoiding an overburden on the beach areas.

4. Master plans of all present and proposed outdoor recreation facilities will be developed as one of the highest priorities of the outdoor recreation planning program. Development of any area should be dependent upon this plan and should not be funded prior to the completion and approval of the master plans.

5. Recreational and other development of areas administered by the Division of Fish and Wildlife, Department of Natural Resources and Environmental Control shall be compatible with the welfare of the fish and wildlife resources in order to protect the status of species' populations, minimize the consumptive enjoyment of game species, and preserve the non-consumptive values of all species for aesthetic and scientific purposes.

6. Multiple use potentials of all State and other public ownerships shall be fully explored, including use of school facilities and the spaces surrounding public buildings for outdoor recreational programs.

7. The State will continue its policy and program of acquisition of mill ponds and other water bodies and should acquire sufficient land at each to accommodate the recreational facilities as needed.

8. The lease-concession type arrangement will be fully utilized for commercial services provided on state lands whenever private enterprise operating under State supervision would result in a reduction in direct costs to the State at the same level of service to the public (including maintenance, part-time employees' salaries, and other administrative costs) or bring about a general upgrading of the service provided.

   This arrangement is also desirable on lands which have high recreational and ecological values but which also have value for commercial uses where unrestricted development of the commercial value by a number of enterprises would be detrimental to the other values. Furthermore, this arrangement could be used to encourage a particular commercial activity through State control and ownership of the necessary land.

9. Regulations shall be adopted and enforced which allow strong State control over dredging, filling, and bulkheading of wetlands and tidal shorelines, and control over or the requirement of approval of impoundment projects and the artificial ponds or lakes so created.

10. The State will actively encourage the provision of camping facilities by private enterprise operating under adequate regulations and at a reasonable return. In this regard, the State should avoid under-cutting private operation by less than fair market rates and limit camping development to lands which are capable of supporting it pursuant to comprehensive master plans.

11. The present State outdoor recreation lands and facilities will remain under State control and operation even if these do not conform to proposed ownership policies until another unit of government indicates a willingness and ability to use them for their needs or until disposition of these properties would not handicap satisfaction of the needs expressed in the State's outdoor recreation program. If local or county governments indicate this interest, the development and operation aspects of the present or proposed uses, if compatible to overall comprehensive plans, will be transferred to the locality, subject to a deed restriction requiring perpetual outdoor recreation use of the parcel by the local jurisdiction or reversion of the property to the State. The interested local unit in each case should satisfy the State of its ability to provide the service.

12. Local governments shall be encouraged to develop recreational areas specifically suited to the needs of their residents. This policy recommends that the facilities in local parks be evaluated in terms of social, economic and physical characteristics of the proposed area to be served.

13. Preparation of open space and recreation plans as part of local comprehensive plans shall be encouraged to serve as the guide for local acquisition and development projects and for distribution of State and federal grants.

14. Private enterprise shall be encouraged to satisfy a substantial portion of the outdoor recreation need, especially in those activities which are appropriately suited to commercial endeavors such as campgrounds, horseback riding stables, golf courses, and marinas. The private facilities will be expected to meet the highest standards of environmental protection and public service.

The plan is dedicated to the achievement of a system of State Parks, Forests, Fishing Areas, and Wildlife Areas to serve the present and future residents of the State, encourage the growth of its economy and provide a reasonable balance between recreation land and land for homes, industry and commerce. In response to this challenge, present State recreation lands have been evaluated to have been the plans of the natural resource agencies in regard to natural features, projected development and certain criteria deemed appropriate for delineating outdoor recreation areas. The natural features of the State have been evaluated in the preceding section; hence, the other two considerations are briefly examined here prior to outlining the proposed State outdoor recreation facilities.

PROJECTED DEVELOPMENT

The Comprehensive Development Plan for Delaware outlines community development areas which represent the major growth areas in the State. While the State outdoor recreation areas need not be as carefully related to future populations as are those at most local levels of government, the State must consider the needs of urban area residents, especially as they relate to specialized facilities available only at State areas.

Figures 27 and 28 depict the 1964 development, the revised 1980 population projection from the Comprehensive Plan, and a forecast of the year 2000 distribution of population based on continuation of the 1960 to 1967 growth rates. As can be seen from this analysis, the majority of the State's population will live in the most urban portion of the State, the Wilmington Metropolitan Area. Secondary concentrations center around Dover, Seaford-Laurel, and Milford with somewhat less intense concentrations at Millsboro-Selbyville, Rehoboth Beach, and Smyrna. Since many of the facilities will provide activities which are user-oriented and since the distribution of population will affect the type and location of State facilities, these projections have been built into the State facilities program.

CRITERIA FOR STATE ACTION

In delineating areas for State acquisition, certain criteria must be established which guide the direction of future acquisition and the type of area to be acquired. The goals, objectives and policies of the plan provide the overall framework for the following criteria:

1. The area should have significant natural, historic or prehistoric value and should be suited by size and configuration for a State facility. Recommended minimum sizes are 500 acres for a State Park and Forest and 1,000 acres for a wildlife area.

2. The area should be bounded by natural boundaries (river, bay, woods or identifiable geological feature) or by significant man-made boundaries such as a major road, railroad, or utility easement.

3. The area should be delineated in a manner which will allow control over access and use where necessary.

4. The proposed acquisition should satisfy the intentions of the goals, objectives and policies of this plan, especially protection of valuable natural resources, as well as help meet the projected outdoor recreation need.

5. Contiguous ownerships resulting in a managerially and developmentally efficient unit shall be stressed. However, due consideration must be given to the existence of prime agricultural, industrial, and residential areas.

6. The proposed acquisitions should give emphasis to urban needs for activities of the type common to native-oriented facilities and should reflect the present and projected growth of the State.

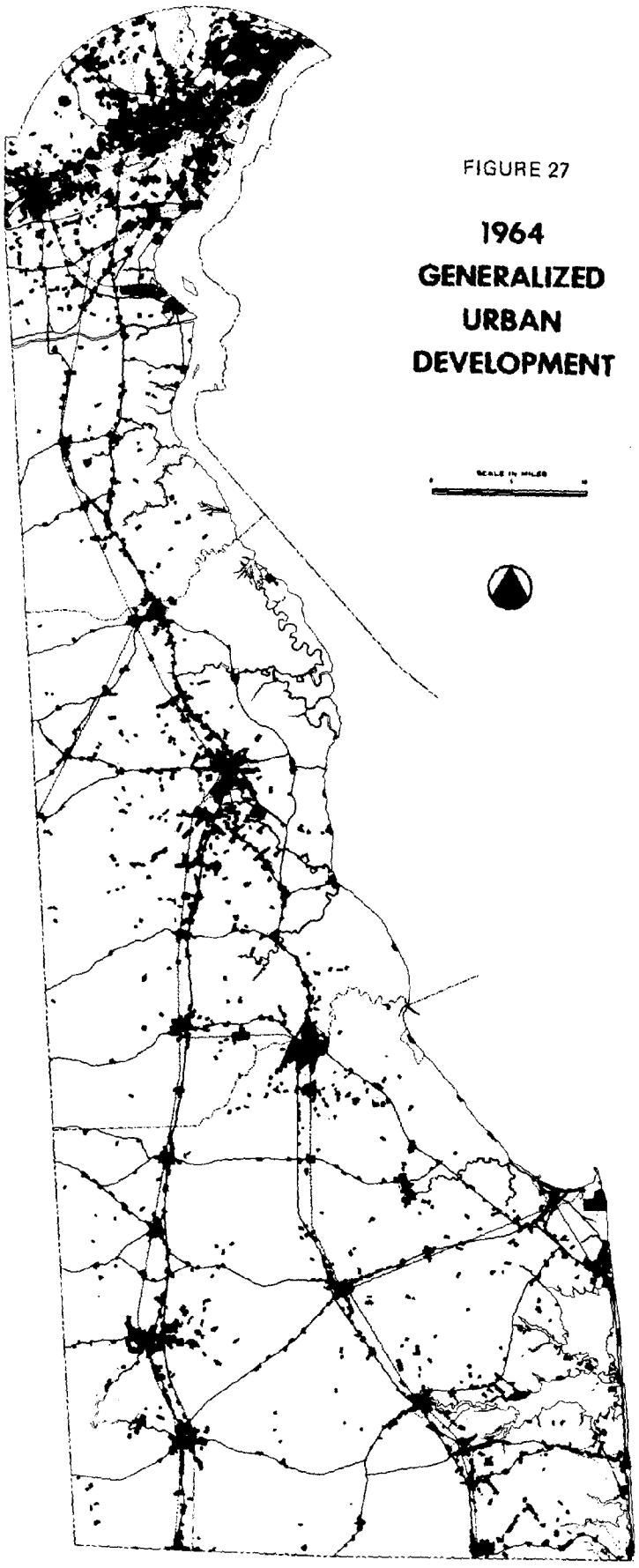


FIGURE 27

1964 GENERALIZED URBAN DEVELOPMENT

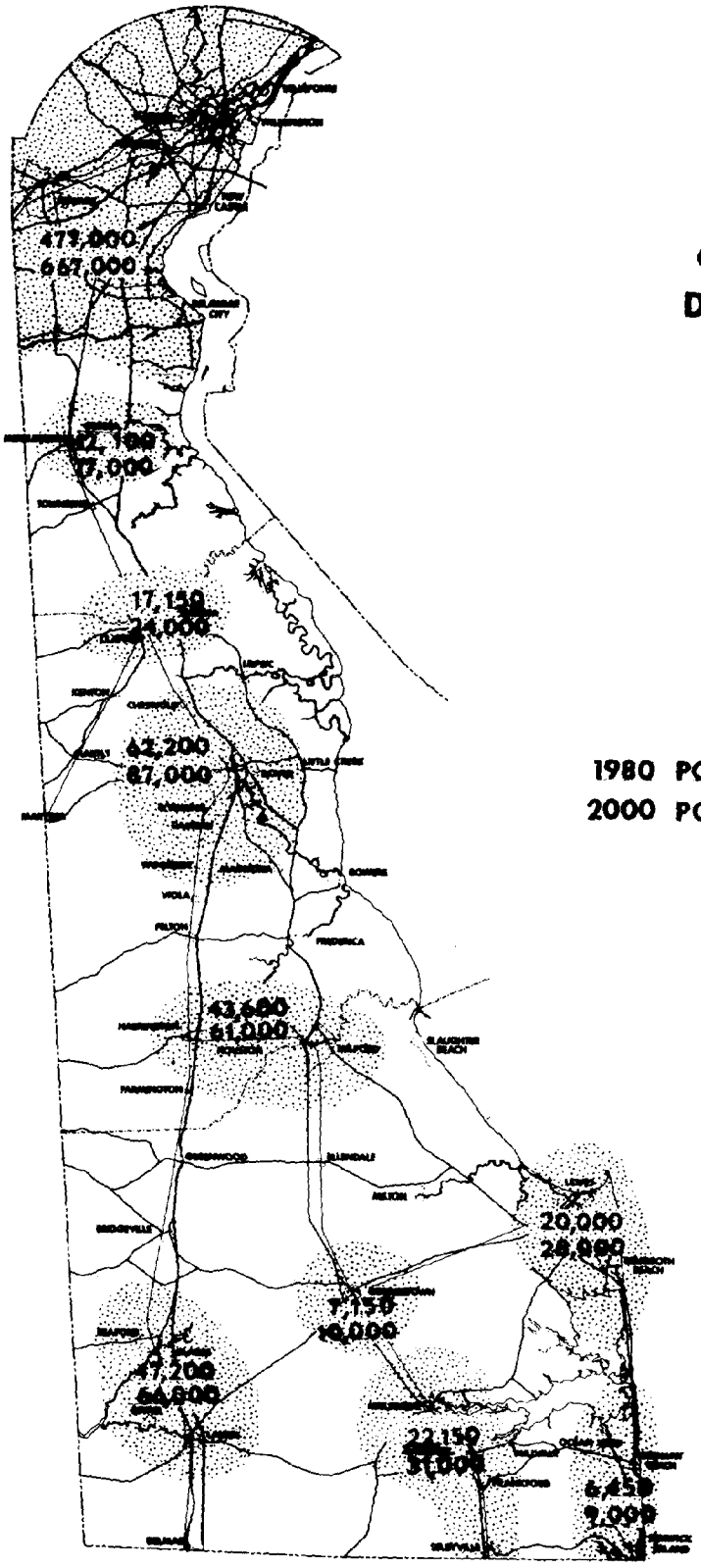


FIGURE 28

COMMUNITY DEVELOPMENT AREAS

1980 POPULATION - 715,000

2000 POPULATION - 1,000,000

THE STATE'S PROGRAM

The Delaware Comprehensive Outdoor Recreation Plan includes a variety of facilities ranging from the active park to the most passive forest preservation or wildlife area. The plan designates the following facilities: Wildlife Area; Impounded Waters, Water Accesses, and Related Facilities; Forest Preservations and Woodlands; State Parks; and Historic and Prehistoric Areas. An analysis of the areas proposed for each of these categories and the activities they provide is included in the sections that follow.

Also included in this section are evaluations of present outdoor recreation ownerships, considerations of areas in which the State should express a long-range conservation interest, and evaluations of the State's role in meeting local needs.

Based on the State's natural features, the distribution of present and future population, the findings of the preceding sections and the established criteria, it is recommended that the State acquire a total of 34,950 acres by 1980 and 22,600 acres between 1980 and 2000.

These acquisitions, combined with present ownerships, would provide over 61,000 acres of outdoor recreation land by 1980 and 83,800 acres by the end of the planning period. These lands would provide for seven major parks, nine wildlife areas, two large forest preservations, a number of preserved historic and archaeological sites, and well over fifty public fresh water fishing ponds.

The areas, their recommended ultimate size, and their BOR classification are shown in Table 34. The locations of the major areas are indicated in Figure 29 Individual descriptions follow.

WILDLIFE AREAS

Wildlife areas represent prime natural resource lands which are valuable for wildlife management purposes. These areas encompass much of the most productive wildlife habitat in the State and offer sport, education, and pleasure as well as serving as a vital link in the cycle of many life forms. Potential uses include hunting for a wide variety of game, picnicking, hiking, horseback riding, field trails, fishing, and nature study.

Wildlife areas are of two major types, upland and wetland. Each has its own characteristic terrain, and each offers certain opportunities not readily available in any other type of facility. Fortunately, the need for preserving many of these areas has been long recognized. In no other type of outdoor recreational facility is the State so well blessed with a legacy of past action. At the present time, there are over 15,800 acres of wildlife area administered by the State Game and Fish Commission, 5,000 licensed to the State by the U.S. Corps of Engineers and another 22,000 acres under the jurisdiction of the U.S. Department of the Interior.

Past actions, however, have not fully met the need and are not likely to be ample in the future based on the findings of the needs study. This study indicates a need for 75,434 acres of land for hunting in 1980 and over 97,000 acres of land for hunting by the year 2000. Even when these needs are tempered by an assumption that all hunting should not take place on public land, it is still obvious that additional land is necessary for this one sport, without consideration of other outdoor recreation uses these areas accommodate. While much hunting and other wildlife area uses will occur on private lands, continued urbanization will deprive many of their contacts with individual land owners as well as deprive the urbanite of available space for these pursuits.

TABLE 34

Proposed State Outdoor Recreation Areas

Outdoor Recreation Area by Type	BOR Class.	Present Acres*	Add. Acres	Ultimate Acres
Wildlife Areas:				
Augustine - Silver Run	III	753	11,247	12,000
Blackiston	III	1,417	3,583	5,000
Woodland Beach	III	3,543	2,057	5,600
Little Creek	III	3,217	4,083	7,300
Milford Neck	III	1,371	6,129	7,500
Petersburg - Willow Grove	III	3,320	3,180	6,500
Inland Bay	III	0	2,000	2,000
Assawoman Bay	III	1,329[1]	1,271	2,600
Nanticoke	III	925	7,075	8,000
Sub Total		15,875	40,625	56,500
Ponds, Lakes & Water Accesses:				
Ponds & Lakes (Land & Water)	II	1,047	3,371	4,418
Marine Access	II	77	63	140
Stream Valleys	III	0	1,900	1,900
Sub Total		1,124	5,334	6,458
Parks:				
White Clay Creek	I	127	503	630
Brandywine Creek	I	434	566	1,000
Lums Pond	I	1,075	675	1,750
Fort Delaware	VI	305	0	305
Killens Pond	II	620[2]	500	1,120
Cape Henlopen	I	1,641	2,000	3,641
Delaware Seashores	I	1,890	710	2,600
Trap Pond	II	965	1,555	2,520
Sub Total		7,057	6,509	13,566
Forest Preservations:				
Blackbird	III	676	124	800
Redden	III	1,520	980	2,500
Sub Total		2,196	1,104	3,300
Estuary Protection - Inland Bays	III	0	3,976	3,976
Total State Facilities		26,252	57,548	83,800

* As reported by the Natural Resources agencies as of July 1, 1969

[1] 130.4a. included in Del Seashore State Park now part of Assawoman Wildlife Area.

[2] Includes 59.0a. of water at Coursey Pond now under the Division of Fish and Wildlife.

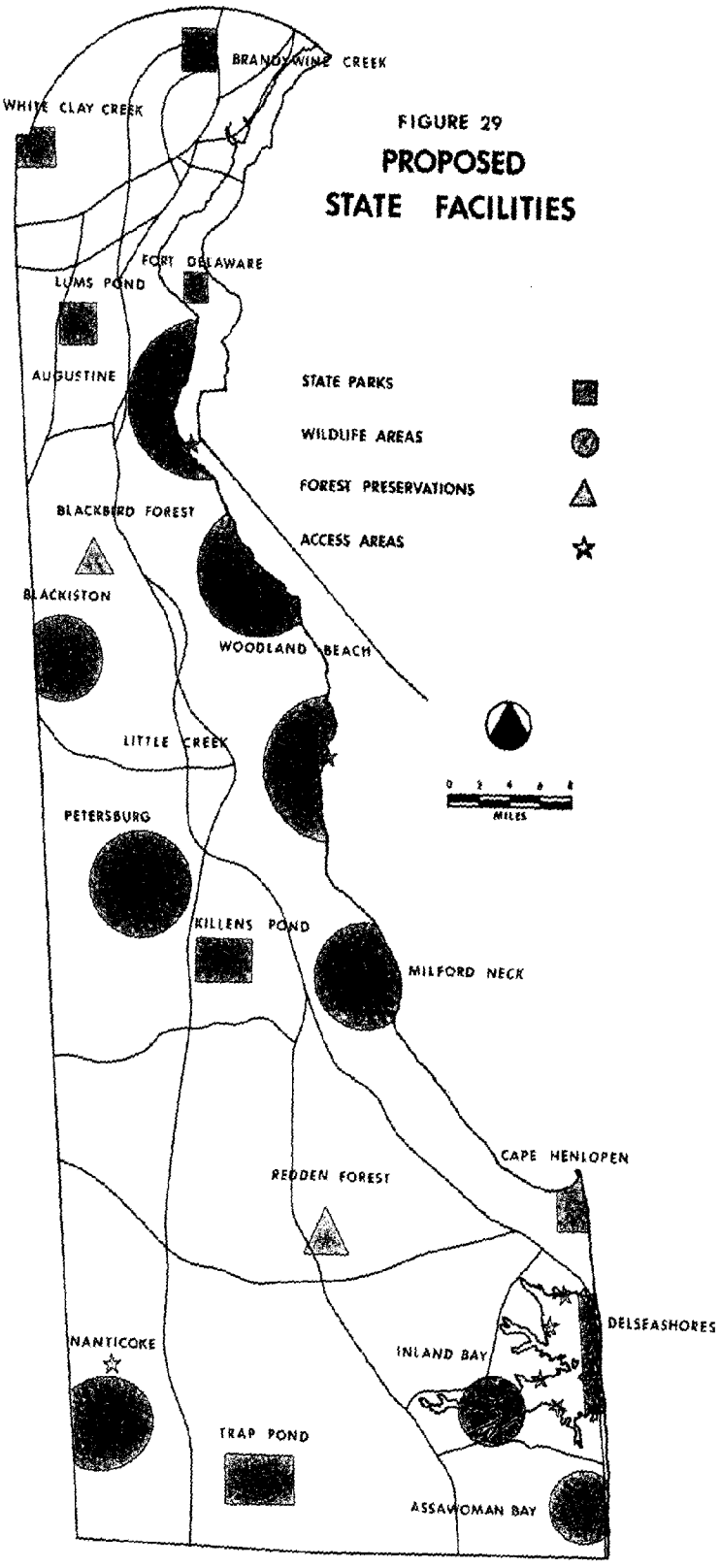


FIGURE 29

PROPOSED STATE FACILITIES

The Outdoor Recreation Plan for Delaware proposes, therefore, that acquisition of both upland and wetland areas continue. Such acquisition, however, should be for the purpose of completing existing wildlife areas in order that they may be efficient management and recreational units.

Delaware's wetlands are among the most productive on the Atlantic Coast and are part of a coastal marsh system which annually provides nesting, rearing, feeding, resting and protective cover to a significant number of the 4 million plus waterfowl using these areas during their north and south migrations. These areas also provide habitat for numerous other birds, for furbearers, and for many small game species.

Equally important, these wetlands and the estuary they serve have significant value as the nursery areas for all forms of marine life. These wetlands in essence are the key to the maintenance of fish resources of the Delaware River and Bay as well as in the Atlantic Ocean (See Figure 30).

These areas are also among the most threatened as they are valuable for industry and commerce due to their proximity to navigable waters. Likewise, they are also valuable, after destructive filling and canal or channel construction for waterfront residential development. These two actions are presently taking in excess of 1,000 acres a year.

In order to protect as much of this resource as is practical for conservation reasons (i.e., the relationship of marsh and fisheries) and for recreational uses the plan recommends acquisition of 26,700 acres during the next thirty years. Of this total, 11,200 acres should be acquired in New Castle County, 12,300 acres in Kent County to fill in present areas, and 3,200 acres in Sussex County to help protect the ecology of the inland bays. These 3,200 acres will form part of the 8,000 acres deemed essential to the Sussex bay estuaries as determined by the "Environmental Study of the Rehoboth, Indian River and Assawoman Bays," report to the Governor, prepared by the State Planning Office, in November, 1969.

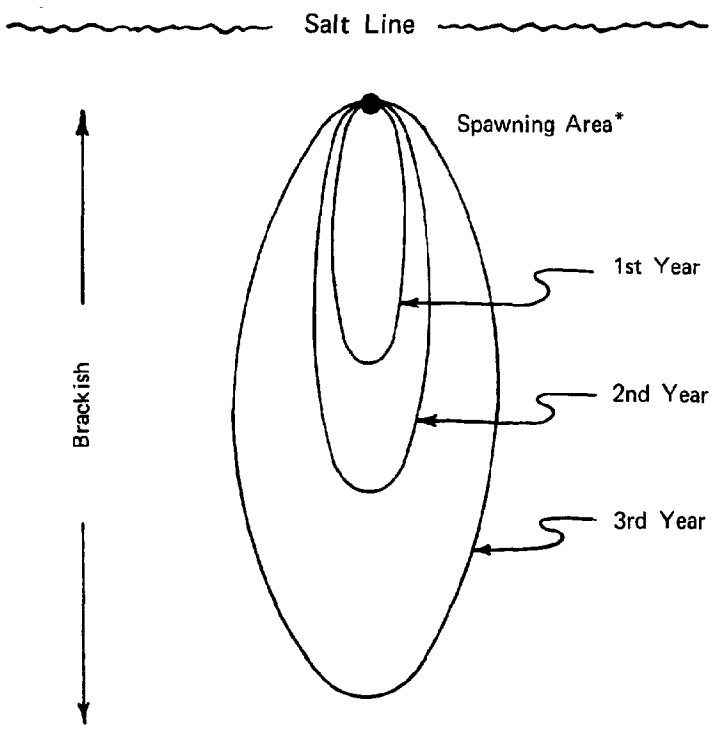
Upland areas offer a somewhat different type of outdoor recreational experience than those offered in wetlands, although many similar activities can take place. For example, both areas offer hunting, nature study, and hiking, yet the experience differs in the first due to different species and habitat and in the latter cases due to considerably different terrain and cover.

The upland proposals include additions to present wildlife areas and are intended to add additional grassy fields, woods and woodland edges to the present inventory. Because of their character, these areas also have value as forest preservations. These areas are located in the central and western portions of the State in a manner which offsets the bay orientation of the wetland areas and with the wetlands provides a well balanced wildlife opportunity for all residents of the State.

The plan proposes additions to existing areas during the thirty year period to an eventual total of 13,700 acres in these areas. The distribution of the ultimate system includes 6,700 acres in Kent County and 7,000 acres in Sussex County. No upland acquisition are recommended in New Castle County as urban day-use needs and land values make action to accommodate other outdoor recreation experiences more critical. Upland needs of New Castle County residents will, however, be served by the Canal lands licensed by the U.S. Corps of Engineers to the Game and Fish Commission and the ultimate 5,000 acres of upland preservation in the Blackiston area which is within an hour's drive of the most urban portions of the State.

FIGURE 30

General Schematic Diagram of Life Cycle
Habits of Some of Important Salt Water Fish Species
in Delaware



* Species such as winter flounder, striped bass, croaker and sea trout spawn in areas of about 3 to 4 parts per thousand salinity. This condition is found in the portion of the Delaware Estuary from the Chesapeake and Delaware Canal south to Little Creek. The fingerlings spend the first and often the second year of life in brackish waters. During the third year they will cycle into the salt environment and return to spawn at a fresh water interface. Of the 18 most important salt water fish species in Delaware, over 80 percent are endemic to the Delaware Estuary environment and all spend some part of their life in that environment.

Source: "Delaware Fisheries and the Estuarine Environment," Ronald W. Smith and Dr. Kent Price, University of Delaware, Newark, Delaware, October, 1969.

These wildlife areas have two major purposes, the first being the protection of wildlife species and the ecology of the wetlands through the preservation of appropriate habitat and through proper species management. The second purpose is to provide areas for public access to recreational activities including hunting, nature study and interpretive facilities, picnicking areas, information services, trail systems for walking or riding, and in some cases fishing accesses. Additionally, some portions of the areas will be utilized for safety and service zones and for observation towers, managers' residences, and wildlife management, experimentation, and research. Land requirements for these activities are expected to include: ten acres for service needs; 5 acres for information, checking, and management buildings; 20-30 acres for safety zones, and an additional 5-10 acres for picnicking, trail-related activities, and parking. These needs would total approximately 50 acres at each wildlife area with the remainder of the area used for hunting, paths for hiking, and trails for horseback riding. The latter two uses have been included with hunting lands as these uses do not greatly overlap in season of activity, and any conflicts could be easily resolved by area management.

In terms of meeting outdoor recreation needs, these areas under State ownership and the lands noted earlier will provide an instant capacity for 3,600 hunters in 1980 and capacity for 5,600 hunters by the year 2000. Additionally, the areas will provide for a recommended two additional nature study areas per decade for a total of nine areas by 2000, a similar number of hiking and riding trail systems, and approximately 500 picnic tables to accommodate 2,200 users at one time.

A conceptual development plan, Figure 31, has been prepared for the typical wildlife area as an indication of the possible interrelationships of wildlife and recreational uses which could be realized at each wildlife area in response to local needs.

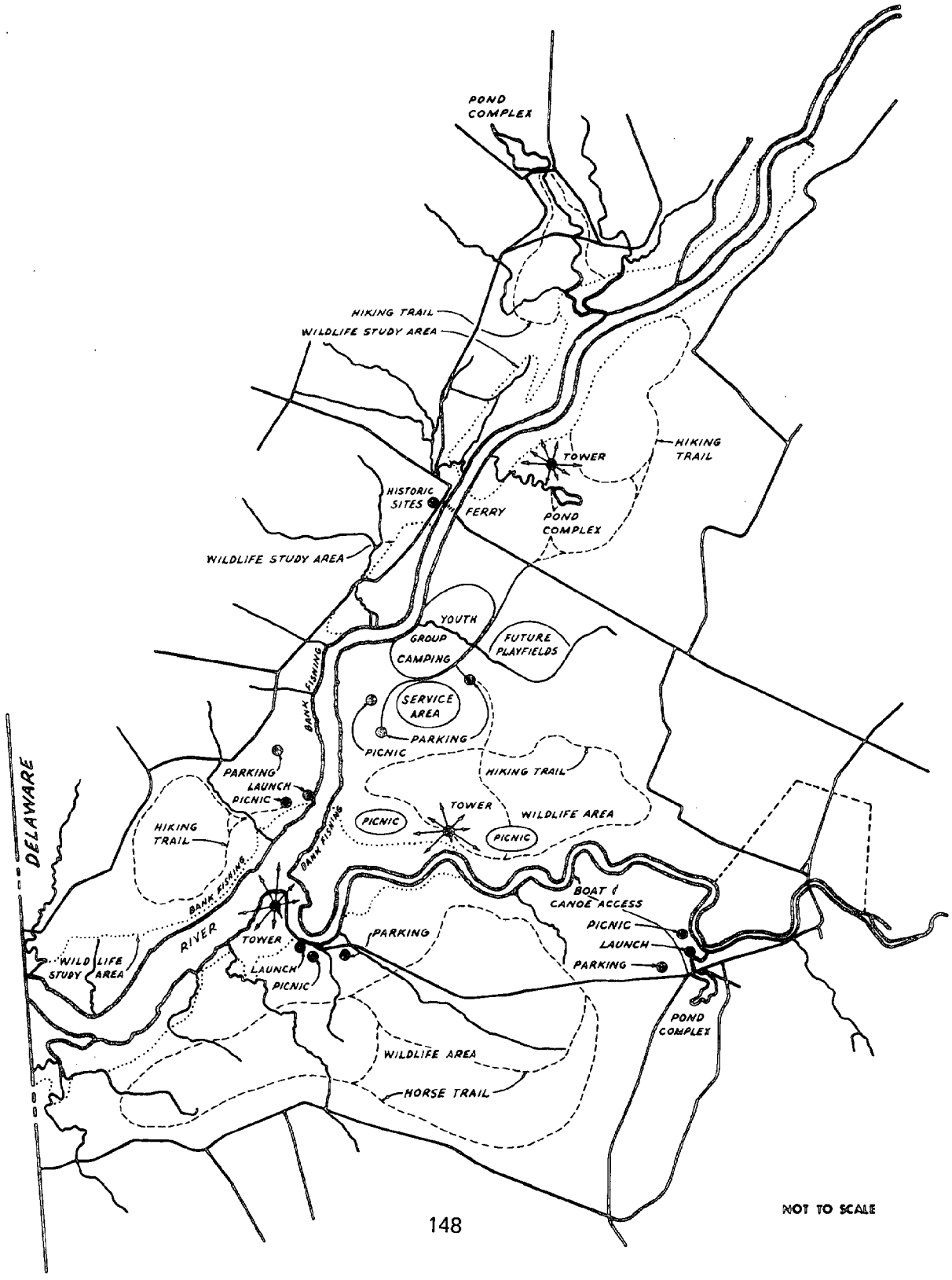
It is important to note the distribution of these areas in relation to the projected urban development of the State. As was noted earlier, achievement of hunting areas is largely precluded within the Wilmington Metropolitan Area due to the scarcity of undeveloped land and its high value for more active recreational and other uses. Nevertheless, by 1980 approximately 33,000 acres of State and federal wildlife lands will be located within one hour's drive of the projected 477,000 persons in this urban area in this period. Almost 45,000 acres will be located within 1 to 1-1/2 hours drive of these same urban residents, with much of this acreage also serving the urban residents of Dover (62,200 persons in the Dover Development area in 1980) as well as residents of the Middletown-Odessa, Smyrna-Clayton, and Milford areas which are projected to have a combined 1980 population of 62,850 persons.

Additionally, some 18,000 acres of upland and wetland areas will be located in the southern portion of the State (south of Dover) to provide the opportunity for these experiences for the projected 200,000 residents in this area by 2000. Also, these lands will provide an auxiliary experience to the estimated 100,000 persons who enjoy Delaware's ocean and bay beaches on certain peak days during the summer.

At no point would the proposed acquisition involve a trip of over 2 1/2 hours from any resident, or for that matter, any visitor from the metropolitan area who wished to enjoy the benefits of these natural areas and the wildlife they protect.

FIGURE 31

MULTI-USE POTENTIAL
TYPICAL WILDLIFE AREA



IMPOUNDED WATERS' WATER ACCESS AND RELATED FACILITIES

A specific policy of this plan indicates the State's dedication to the acquisition of impounded waters and sites as well as the provision of facilities to ensure the right of public access to tidal waters. A long-range program of the State Fish and Wildlife Division has been the acquisition of pond and lake sites, the construction of control structures, and the provision of launching ramps, parking areas, and related facilities to encourage use of these waters for fishing and boating.

To date, some 21 lakes and ponds have been acquired, providing 13 fresh water launches and related recreational uses. The plan recommended continuation of this program to eventually include public ownership of all significant impounded waters.

The needs study indicates that additional water and land areas, boat launch facilities and parking will be necessary to satisfy the 1980 and year 2000 demand. These needs include 65 boat launches for fishing and a capacity for 6,525 boat fishermen and 19,565 shore fishermen on a peak day (2000 demand) as well as some 176 launching sites for other boating uses.

In order to partially satisfy this need, existing ponds and former pond sites were reviewed. This analysis indicates that 40 sites, ranging in size from 8 acres to 350 acres of water, have merit for State action. (Figure 32). If all of these sites were acquired, a total of 2,800 acres of fresh water would be made available for this activity. Further, these areas would provide space for 55-60 boat launches for fishing and canoeing.

If the present standard of land in amount equal to 10 percent of the water area (with a minimum of five acres of access) is followed, the total land adjacent to these water areas would equal 330 acres. In each case, the land acquired should be sufficient to provide one acre of parking for each boat launch, a minimum of 15 picnic tables (2 acres of the 5 acres minimum) and related parking, and sufficient pond frontage for fishing, landscaping, passive play uses, and parking for non-boat fishermen. The area acquired at these sites, however, should be more inclusive than at previous launching areas in that efforts should be directed toward preservation of some shoreline to a depth of at least 200 feet from the water line. This additional area would allow land for picnic sites, bank fishing areas, the boat launch, parking, areas for seating, and sanitary facilities which would make the facility more attractive and useful. Figure 33 suggests this type of development. Formation of the Department of Natural Resources and Environmental Control and improvements in acquisition funding would facilitate an appropriate distribution of functional duties in the development and administration of these areas.

While these pond sites and their development will satisfy a major portion of the total State need, they unfortunately will not satisfy much of the urban need since all but ten sites are located in the southern two counties, and these ten sites are outside the highly urbanized portion of New Castle County. These ten sites will, however, provide approximately 820 acres of public fresh water fishing and boating within a 30 minute drive of the urban areas. Therefore, the plan recommends a first priority for acquisition of these areas and at least 80 acres of land for accesses.

One proposed impoundment deserves additional emphasis, that being the 350 acre lake to be created as part of the Upper Choptank River Watershed Project being conducted by the State and federal soil conservation agencies. This project, located in western Kent County, would create a substantial waterbody for public use. The lake would be the major water area in central and southern Delaware.

FIGURE 32

POTENTIAL PUBLIC FISHING PONDS

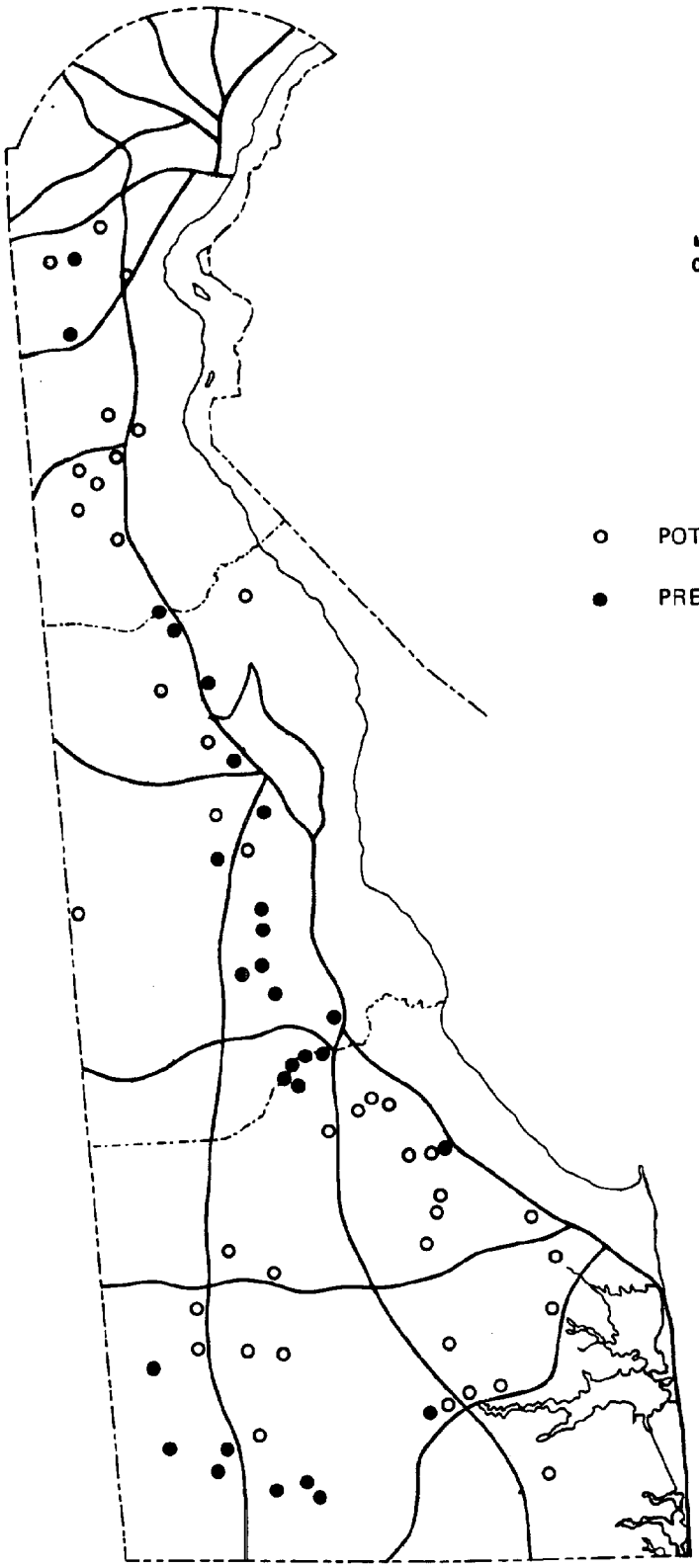
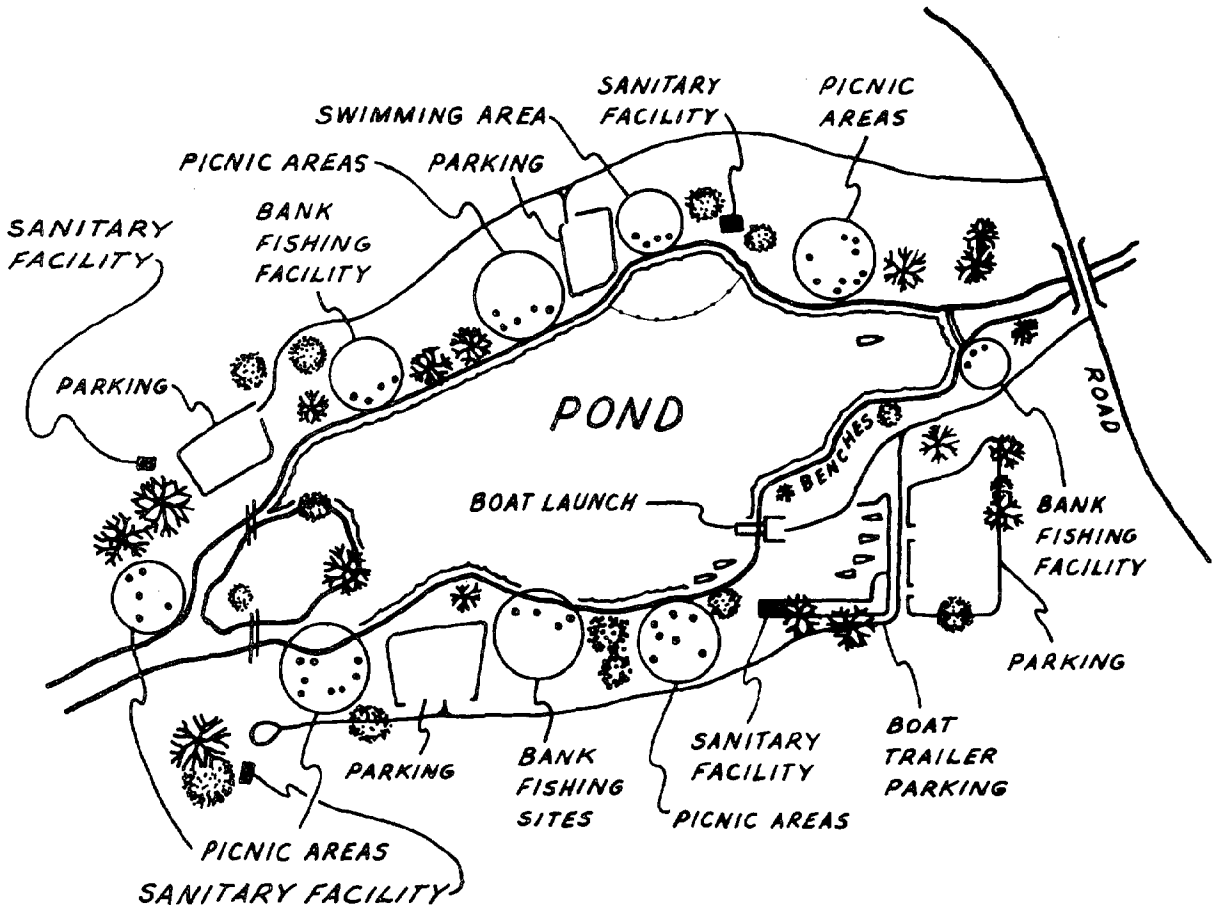


FIGURE 33

TYPICAL POND COMPLEX



NOT TO SCALE

Development of this area as a park was not desirable due to the high cost of the necessary land and facilities of such development, the location of the facility in relation to the State's present and projected population, and the proximity of other outdoor recreation areas presently suited for the same type of uses possible on the non-water portions of this area. The recreational value of the pond, however, requires some action to allow public use. Since the proposed impoundment abuts a former Highway Department borrow pit, the plan recommends use of the pit, with appropriate reclamation, for accesses, parking, picnic areas, and informal play. Also at this site the plan recommends construction of the type of facilities suggested in the "pond complex" typical. This type of development and the non-water opportunities possible at Petersburg Wildlife Area just six miles away would, in essence, provide a "park" at much less cost, especially for land, with greater resource utilization than would be possible under any other approach. This approach would cost approximately $500,000.

This development would also provide a good opportunity for demonstration of the multiple use value of the watershed project and the reuse potential of a borrow pit. It would also provide an opportunity for joint development between the Fish and Wildlife Division (pond and control structure) and the Parks, Recreation and Forestry Division (recreation facilities).

The right of public access to tidal waters is rapidly being lost through development or other restriction on the individual's ability to cross the private lands surrounding such waterways. If present development patterns continue, especially in the inland bays, this right may be limited to a very few present public launching areas. In recognition of this development, the Fish and Wildlife Division has provided for 17 salt water accesses throughout the State (see Inventory Section). Additionally, two State parks provide boat launches for salt water activities in the inland bays. While sufficient data is not available to determine the exact needs by number and location for additional access, it is recognized that salt water access is desirable and that present facilities are inadequate for the demand. Therefore, the plan recommends provision of at least two additional access points to the west side of the Rehoboth Bay, one additional access on Indian River Bay near Massey's Landing, at least one additional access on the west side of the Nanticoke River, one additional access area near the Chesapeake and Delaware Canal to better serve the urban area, and one access area in the vicinity of the Little Creek Wildlife area to better serve the greater Dover area. Figure 34 depicts a typical marine access area, designed to provide such access and to allow for other uses in much the same manner as suggested for the pond sites.

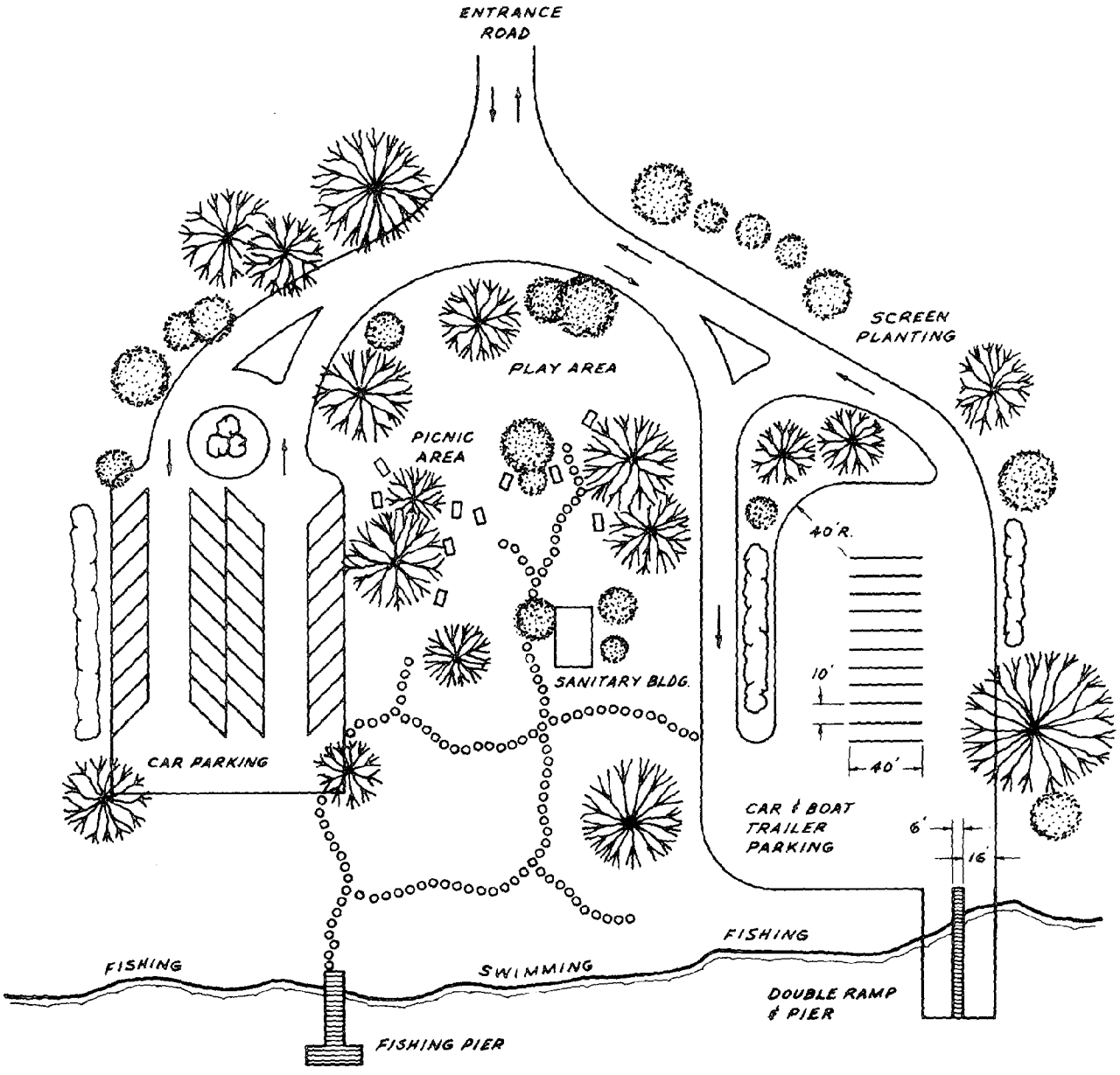
One additional consideration involves canoeing and similar activities. Few other outdoor recreation activities provide a closer link with nature and heritage than canoeing. Canoeing allows access to many shallow interior watercourses and provides a view of the watercourse and its natural surroundings not easily obtained in another fashion. In a similar manner, most areas suited for canoeing can be used by any non-motorized shallow draft vessel. Access by these means can provide rewarding experiences including fishing and nature study, especially photographic study, as well as the canoeing or boating experience.

The planning program was not able to thoroughly explore and delineate watercourses suitable for these uses although one 4-1/2 mile system was explored and several other systems seem possible. It is recommended that a special recreation study be undertaken as part of the continuing planning program to evaluate these areas and explore means for their protection and availability for public use.

The major problems confronting these systems are the rapid development of adjacent land, the continued problem of pollution, and the lack of tools other than acquisition in fee of the shoreline for the system's protection. As a first step toward the development of the system, the plan recommends designation of the upper Murderkill River and Brown's Branch from Coursey's Pond to McCauley's Pond as a canoe and fishing water area. It is further recommended that this system be zoned as open space under the Kent County Zoning Ordinance and that land areas suitable for bank fishing and for canoe or small boat accesses be acquired and developed by the State Fish and Wildlife Division.

FIGURE 34

TYPICAL MARINE ACCESS AREA



NOT TO SCALE

Major features of the Murderkill system include a connection of the proposed Killens-Coursey Pond State Park and the McCauley's Pond Fishing area, the virtual lack of any urban intrusion into the system, the potential for good public fishing and canoeing access, the opportunity to re-use a State-owned borrow pit for recreation purposes, and the system's proximity to a 1980 projected 120,000 persons within a 1/2 hour driving time. The value of this link and its experiences should serve as a model for additional systems elsewhere in the State.

The recommended scheduling for the provision of impounded waters, accesses and protection of the streams is:

A. Acquisition of at least two ponds or pond sites per year until 1980 and one site thereafter, with initial preference given to acquisitions to serve urban residents:

B. Development of fresh water launches and related recreational and service uses, including necessary dams, bottom clearing, and parking at the above rate with emphasis on such development at presently owned sites first, urban acquisition second, and new acquisitions third;

C. Acquisition and development of at least one marine access area during each five year period beginning with 1970-1975; and

D. Evaluation of potential canoe and small boat systems and delineation thereof with appropriate legislation and acquisitions to provide at least one major system in each County by 1980 and others thereafter. As a preliminary suggestion these could include the Brandywine and the Red Clay Creek in New Castle, the Murderkill in Kent, and the James Branch in southwestern Sussex County as part of the Trap Pond State Park.

FOREST PRESERVATIONS AND OTHER WOODLANDS

Woodlands are as important a part of the total ecology of the State as any other natural resource areas. They provide cover and habitat for many forms of wildlife; they are part of the process by which the oxygen content of the atmosphere is maintained; and they contribute to the total rainfall-runoff-absorbtion cycle. Woodlands also provide screening, add value to adjacent developments, and contribute to the psychological satisfaction with one's environment.

These woodlands are increasingly threatened by urban development. During the period 1962-1965, woodlands disappeared at the rate of 305 acres per year along the two mile wide Delaware Route 2 (Kirkwood Highway) urban corridor and the total acres of woodland in this same corridor decreased by 1,900 acres from 4,500 acres in 1954 to less than 2,600 acres by 1965.[29]. Historically, the woodlands in the State have decreased from about one million acres at the time of the colonial settlements to about 391,000 acres in 1959.[30]

At the present time, some 6,246 acres of woodland are under State Forest ownership with other woodlands being included in the properties of other State and federal natural resource agencies. These ownerships, totalling approximately 9,000 acres, represent about 2.3 percent of the 391,000 acres of forest in the State.

[29] "Trees-Woods-Urbanization and You," Agricultural Experiment Station, Circular Number 3, University of Delaware, Newark, Delaware, December 1966, P. 8.

[30] Interstate Water Resources Survey, State of Delaware, 1959, from the section on the State Forestry Department, P. 27-2.

The State Forester has identified 115 different species of trees native to Delaware woodlands.[31] Although not every tree species can be found throughout the State, it is important that these individual species be afforded the same concern given to the rare and endangered wildlife species in order that no part of the State's natural heritage be lost.

The Outdoor Recreation Plan for Delaware recognizes the value of these woodlands not only their natural value but also for outdoor recreational activities. These areas provide an opportunity for nature study, hiking, picnicking, horseback riding, and organized youth group camping, as well as the background for more active pursuits. Therefore, woodlands, especially the forest edge, have been utilized in the delineation of many of the proposed acquisitions. Two areas have been officially designated forest preservations and acquisitions totalling 1,124 acres are recommended to increase the size of these areas to a total of 3,320 acres. The areas are portions of the Blackbird State Forest, located southwest of Middletown, and the Redden State Forest, located in the center of Sussex County. These two areas are specifically reserved as forest tracts and are intended for minimal development. As both forests have activity areas in them, the plan recommends focusing all future development at these locations to provide a heart-of-the forest experience. A maximum of 5 percent of these tracts should be intensively developed with the remainder left in a natural state interrupted only by necessary fire roads and trails. In terms of relationship to the projected need, these areas have been included in the hunting calculations in the wildlife area section. In regard to other uses, they could each provide for a youth group camping area, could each accommodate horseback riding trails, a series of hiking and interpretive trails, primitive camping, at least one nature study building, and approximately 35 acres of picnicking sites scattered throughout the areas for a total of 250 tables accommodating an instant capacity of 1,125 users.

Other major forest or woodland areas are included in the proposed wildlife areas, in many of the parks, and in the areas noted for long-range conservation interest.

One area of specific woodland preservation corresponds with the Murderkill Stream Valley System which was delineated strictly in regard to forest cover and which emcompasses approximately 1,500 acres of woodland. Furthermore, over 14,000 acres of forest cover are included in three major wildlife areas (Nanticoke, Petersburg-Willow Grove, and Blackiston) as well as scattered tracts within the other wildlife areas.

Woodland is also preserved in the proposed State Parks. Portions of the proposed Brandywine Creek and White Clay Creek Parks are wooded as is a large portion of Killens-Coursey State Park. Likewise, the recommended acquisitions along James Branch and in the vicinity of Trussem Pond, are intended to preserve an area noted for the natural beauty of the Cypress tree, a species which is now rather limited in Delaware.

In addition to these holdings, private commercial enterprises control well over 20,000 acres of prime woodland. If these areas are properly managed for logging, their woodland value would be presumed. The only constraint on the use of these lands for permanent open spaces or for recreation is their private ownership status. Reasonable regulation coupled with cooperation and incentives from the governmental bodies would be of considerable value in assuring public enjoyment of these woodlands. Smaller private ownerships are also valuable for recreation use, especially for hunting and nature study. Forest management information and education programs, relevent assessment practices, and a revision of drainage and other construction programs help to protect much of these remaining forest resources.

Finally, woodland is also preserved in large measure in the long-range conservation areas which include the Cypress Swamp, areas along the inland bays, much of the present Ellendale and Redden Forest holdings, the estuary of the St. Jones River, and areas along the Brandywine. These woodland conservencies combined with those above will preserve approximately 25,000 - 27,000 acres of prime woodland for public use and enjoyment while protecting almost 7 percent of the total woodlands in the State.

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[31] Delaware Trees, William S. Taber, State Forestry Department, 1936.

STATE PARKS

Parks are the most completely developed of all State outdoor recreational facilities and are the most extensively used. For these reasons and their location which must reflect accessability from the urban concentrations of people, these facilities are also the most expensive. Therefore, the number, location, and development must be given the highest level of thought and proper planning. In order to approach the level of concern necessary, the plan includes a review of the potentials for park use of other areas as demand warrants. This analysis includes evaluation of natural features, population location, the availability of funds relative to the cost of the facility, and the objective of reaching an overall minimum level of development in every park by 1980 to ensure public use of each of these facilities.

It should be noted that these reviews do not preclude the need for master planning as these reflect only a cursory evaluation of the area resources and their potential for outdoor recreational uses. Such reviews are useful, however, as points of discussion of costs, activities, and priorities and as a general indication of the degree to which the outdoor recreation need will be met.

White Clay Creek State Park

White Clay Creek State Park is located in the northwestern portion of New Castle County, about three miles north of Newark, and about 18 miles west of Wilmington. It is proposed to be approximately 700 acres in size, and located adjacent to a proposed 1,400 acre water supply reservoir. Because of its proximity to large concentrations of population, the park development emphasis is on day-use facilities.

The area encompassed generally includes that property lying east of Route 896, north of the proposed alignment of the Newark circumferential highway, west of the White Clay Creek reservoir, and south of the Delaware-Pennsylvania boundary. The proposed park includes two relatively small peninsulas north of the main portion of the park, included because of their isolation, and the fact that they will be cut-off from the rest of the State by the reservoir. If available at a reasonable price, these peninsulas could offer opportunities for primitive camping, fishing, and picnicking accessible only by boat. If not available, the 630 acres in the main portion would provide an excellent outdoor recreational potential.

The terrain, although very steep in some areas and heavily wooded in others, offers many opportunities for the development of a variety of activities. Among these are: swimming, boating, picnicking, golf, informal athletics, and court and deck games. Supporting facilities, such as a lodge for informal group activities and an outdoor theater for the performing arts, could also be provided. The golf course is a much needed recreational facility, there being a shortage of such facilities open to the general public in this area. A regulation 18-hole, par 73 golf course if recommended.

The reservoir forms the focal point for the water-oriented activities. Because of possible reservoir water level fluctuation, if swimming is to be provided, it may be necessary to provide for a stable water level area by constructing a dike across the mouth of a small cove west of the proposed dam site. It is recommended, however, that prior to constructing the dike, a study be conducted to determine possible pollution problems which may arise because of the limited size of the cove and whether they can be economically solved. In the event that the pollution cannot be controlled, then consideration should be given to the construction of a swimming pool adjacent to this cove.

Boating will be permitted on other portions of the lake. Both a boat launching ramp for boat owners and a rental concession for day-users are recommended.

Picnicking, one of the most popular of outdoor recreation activities, and generally enjoyed in conjunction with other activities, is generously provided for with sites for family and group picnicking areas serving 3,435 people recommended. The family picnic sites are in the more wooded, steeper areas oriented to the lake while the group areas are in the flatter, more open areas.

As mentioned, an ideal opportunity for primitive camping is afforded by the two relatively small peninsulas in the northern sector of the park. Space is available for about 20 sites, accessible only by boat. Reforestration will be necessary to make the area useable.

White Clay Creek State Park, at full development as proposed herein will provide an instant capacity of approximately 13,000 to 14,000 people.

Activities	Instant Capacity
Picnicking	3,435
Swimming	4,000
Boating, Fishing, and Related Activities	4,700
Golf	200
Active Recreations	600
Other Uses	100
Total	13,035

This park is highly oriented to the proposed reservoir. If, for some reason the reservoir is not built, it is recommended that the park boundary extend to the centerline of White Clay Creek to preserve the steep slopes and to allow public access to the stream. In this case, the beach complex should be replaced with a pool complex; the picnic areas expanded to the degree possible on the slopes; and White Clay Creek Road closed for use as a nature trail.

Development of this park should be given a high priority due to its proximity to the Delaware urban corridor from Newark to Wilmington.

Brandywine Creek State Park

Situated astride Brandywine Creek in the rolling topography of the Piedmont Plateau, Brandywine Creek State Park provides outdoor recreation opportunity for the most urban portion of the State. The park is located within five miles of Wilmington, easily accessible to the majority of the area's residents. The park is characterized by rolling topography and open field to the west of the Brandywine and rugged wooded slopes to the east. These characteristics offer outstanding potential for development of a varied nature-oriented facility.

The State presently owns 433 acres on the west side of the Brandywine and this plan recommends expansion of the facility to approximately 1,000 acres by an arrangement with Woodlawn Trustees for the public use of some 500 acres of steep slopes and woodland on the east. The proposed park boundary would generally follow Delaware Route 100, Thompson Bridge Road, Mount Lebanon Road (Maintenance Route 363) and the east edge of the large wooded area between Thompson Bridge Road, Concord Pike, and Route 363.

Because of its location relative to Wilmington, development emphasis is on day-use activities and interpretation and enjoyment of the park's natural qualities. The plan recommends the following development for this park.

There is an extreme shortage of public swimming facilities in this area of the State. Except for Brandywine Creek, there are no natural water bodies which could be used to create adequate facilities, and extensive beach development along this creek would mar its attractiveness and detract from the proposed fishing and boating. Consquently, a pool complex is recommended to contain separate swimming, diving, and wading pools, a bathhouse and snack-bar building, play areas, and a parking area. This facility would be lighted for night-time use. Its size and proposed prominent location on the site make it advisable that care be given to provision of an attractive setting for the structures and of adequate tree and plant or landform screening for the parking area.

With its existing nature study building, this park affords an excellent opportunity to fill a great need for conservation education. An expanded nature study interpretive program centered around the building and existing trails will also serve to preserve the naturalness of the more wooded areas of the park. A tower, accessible from the trails, is recommended for wildlife observation.

Picnicking is recommended for this park, although the sparseness of trees in the designated area dictates that it be developed to ultimate capacity over a period of time. The sites initially developed should be in the existing woodlands. Simultaneously with this initial development, the remaining areas should be planted: one area with landscape size trees (two inch caliper or larger) for use in approximately ten years; another area with seedlings, for use twenty year hence.

Utilizing Brandywine Creek to greatest advantage, pleasure boating and fishing are proposed. It is suggested that a canoe and rowboat concession be established, and that boating be limited to the southern portion of the Creek. Boat and bank fishing will be permitted in the area to the north.

The Woodlawn Trustee's lands, considered a part of this park, present a unique opportunity for compatible use of public and privately-owned lands. It being the Trustee's desire that these lands be preserved in their natural state, it is proposed that only nature trails and small, trailside picnic areas be provided. A single footbridge could provide access into the area; more than this would make the area too accessible and tend to overcrowd the area.

Brandywine Creek State Park, at full development as proposed herein will accommodate approximately 7,400 people on a peak day. The instant capacities by activity provided by full development are:

Activity	Instant Capacity
Picnicking	1,800
Swimming	2,000
Boating, Fishing, and Related	250
Active Recreations	1,500
Hiking and Nature Activities	1,750
Other Uses	100
Total	7,400

Development of this park has been given a high priority as its location and potential outdoor recreation opportunities would serve much of the need of Delaware's most urban residents. In this regard, it is further recommended that the Division of Parks, Recreation, and Forestry, in conjunction with local groups, provide programs to enable the urban residents, especially the lower income and minority groups, to reach the park and make use of its facilities. Specifically, this could include shuttle bus service for a "day-in-the-park" and various educational programs at the park which are not reflected in the instant capacity.

Lums Pond State Park

Lums Pond State Park has come into State ownership through the United States Army Corps of Engineers' activity along the Chesapeake and Delaware Canal. It was originally bought to provide a water supply for the canal locks. When the canal became a sea level waterway the pond was regarded as excess land and turned over to the General Services Administration for disposal before any damage through filling took place. One hundred and sixteen acres of the State-owned portions are currently developed as a State park. The 464 acre State park land is contiguous to a 563 acre wildlife area and 5,000 acres of federal land along the Chesapeake and Delaware Canal and could be part of a linear park system along the Canal including recreation areas at Lums Pond, at Fort DuPont in Delaware City and at selected spots on the Canal. The area has a great potential and can become a strong link in the State's recreation program, for it serves the State's major metropolitan area.

The park possesses considerable potential for a wide variety of outdoor recreation uses including camping, swimming, active play, hiking, nature study, picnicking, boating and fishing.

The plan recommends acquisition of lands enclosed by Routes 301 and 71, and Road 54 to form a park containing approximately 1,750 acres. The park is focused on the 209 acres of Lums Pond in recognition of the aesthetic value and recreational potential of large water bodies. A master plan has been prepared for the development of this park and its development has a high priority due to its urban-serving character.

Two basic concepts have been adopted for this park: (1) the pond is a significant waterbody whose full recreational potential should be utilized through such means as bottom improvement, sediment control, water management and development of the fish resources; and (2) the efficiency of providing the facilities shall be obtained by proper location for joint use, by congregation of facilities requiring utility services, and by careful location of facilities in regards to soil and forest factors.

The park provides for a golf course, active recreational areas, and camping along with related facilities to serve the needs of park users. Water oriented uses, both at the pond and at pools, and a historic area (containing two important structures, the Sign of the Buck Tavern and the Samuel Davies House, both under restoration by the State Archivist) are suggested throughout the park. Fishing and picnicking accesses are suggested throughout the park, however, limited to foot and boat access in the more passive portions of the park.

The northern and western portions of the park and the north shore of Lums Pond are suggested for active recreational use while the south-western portion is suggested for family and group camping. The park has sufficient tree cover to allow for development of camping areas, open fields for both passive and active recreation near both campers and day users of the park, and an area now used for a beach. The area also has a long wooded shore on Lums Pond highly suited for fishing access, picnicking and hiking.

Finally, portions of the pond and adjacent woods and fields are recommended for natural environment areas. These and other passive use areas at the western end of the pond would provide a valuable nature orientation and contrast to the more active facilities.

The park, as outlined, could accommodate an instant capacity of approximately 17,505 persons and a daily use capacity of 38,912 persons.

Activity	Instant Capacity
Picnicking	4,830
Swimming	4,800
Boating, Fishing, and Related	1,202
Golf	250
Camping (Family)	2,418
Camping (Groups)	100
Active Recreational Areas	1,480
Hiking and Nature Activities	550
Other Uses	1,875
Total	17,505

The estimated cost of this type of development is $22,790,000, including all recommended facilities. These costs envision utility service to the active recreation area and water and dumping stations to each group or cluster of camping sites. This level of development would provide a viable outdoor recreation experience consistent with funding constraints as well as allow for future adjustments to meet the needs of the urban portion of the State which it serves. As necessary, the facilities provided could be augmented by facilities along the Canal and tied into an overall system for recreational utilization of the Canal lands.

Fort Delaware State Park

Fort Delaware, a former prisoner of war facility and Civil War fort, is located on a 305 acre island in the Delaware River. The fort, a five sided structure, is significant example of masonry craftsmanship of the Civil War era and includes a wide moat and large calibre gun emplacements. The fort has been vandalized during earlier periods, but recent interest by historical groups has resulted in restoration of a portion of the original quarters, improvement of the interior grounds, and operation of a museum. Park improvements have included clearing of the parade grounds and access paths, construction of dock and ferry slip, and provision of picnic facilities.

The island, known as Pea Patch Island due to a local legend which cliams that the island was formed from a ship loaded with peas which ran aground at this point, contains some 135 acres of marsh and approximately 170 acres of fast land, most of which is heavily vegetated. Development of the island is constrained by poor water quality, mosquitos, and significant but vulnerable waterfowl habitat on portions of the marshes.

Because of these constraints this plan recommends very limited development of the grounds surrounding the fort except for some open meadow play areas on fill in the southwestern portion. Extensive restoration of the fort is not recommended, however, restoration of the parade grounds, major interior frame structures, and informational facilities would be appropriate.

It is recommended that the picnicking on the island be expanded to accommodate approximately 300 persons at a time (up from 180 now) or a total of 70 tables. This use would occupy about 10 acres. The remainder of the park should be left in its natural state except for nature trails and historic markers.

The breakdown of capacity by activity is:

Activity	Instant Capacity
Picnicking	300
Nature Trails	100
Tourists	100
Total	500

A feasibility study is being prepared for the restoration of this fort to determine the amount of expenditure necessary to put it into usable condition.

Killens Pond State Park

Killens Pond State Park is located in central Kent County within easy reach of the major development expected in central Delaware. It is within a half hour drive of the Dover and Milford urban areas which are projected to have combined a 1980 population of 105,800 and a 2000 population of 148,000.

The park focuses on two fresh water ponds, Killens and Courseys with a combined water area of approximately 110 acres, and the stream-valley of the upper Murderkill River. At the present time, there is very little development on the park, however, initial planning indicates that substantial development is possible within the limitations of funding.

Primary facilities recommended include a beach complex on Killens Pond, boating concessions on both ponds, picnic areas, a nature study complex and areas reserved for active recreational uses such as ballfields, tennis courts, and basketball courts. The park could also include a day camp area designed for organized group activities.

The recommended facilities would make use of the park's most significant resources: the two ponds, the surrounding woodlands, and the dry and level open fields.

Access to the water is a major problem at the present time as major portions of both ponds cannot be easily reached by vehicle or from any boat access point. In order to overcome this problem, the park should provide for boat rentals on both ponds plus public launching access at Courseys Pond where such an area currently is available.

The park concept recognizes the value of the wooded pond setting for passive recreation, especially picnicking and hiking. This setting also provides an opportunity for nature study in an area rich in variety of flora and fauna.

Additionally, the park area includes large land fields highly valuable for active recreation uses such as ballfields, tennis and basketball courts, and play equipment. These fields are also useful for accommodating the roads and parking areas, allowing the woodlands to be preserved for passive uses. The development of swimming pools and related facilities may be necessary at some point in the program as the water-contact value of the ponds is increasingly questionable. In the long-range period, the park could also include additional camping, active play and picnicking facilities as well as facilities for other outdoor recreation activities.

Minor realignment of some roads, construction of a new access to Lake Forest School, and closure of a portion of other roads would greatly improve the setting within the park with little effect on circulation.

The facilities recommended in this evaluation would provide for approximately 17,500 persons:

Activity	Instant Capacity
Picnicking	7,755
Swimming	2,000
Boating, Fishing, and Related	1,000
Camping (Day and Group)	570
Golf	220
Other Uses	5,955
Total	17,500

The estimated cost of this development is $20,500,360. This cost includes construction of the necessary access areas, extension of the beach areas, and active use facilities. The action program indicates the portion of this development that is programmed for the first ten years.

Development in this park, while important for full recreational use, should be given a relatively low priority as the three urban parks (White Clay, Brandywine, and Lums) and the Cape Henlopen-Delaware Seashores system experience larger demand and service a greater portion of the population.

Delaware Seashore State Park

Delaware Seashore is comprised of two parts: the first, a six-mile stretch of barrier beach extending from Cotton Patch Hills on the south to Indian Beach on the north; the second, a three-mile section bounded by Fenwick Island on the south and South Bethany on the north. Many visitors from Maryland and the District of Columbia as well as Delaware residents enjoy the available recreational facilities at the ocean and bay.

In Delaware a Seashore Park proposed development is primarily focused on ocean and bay bathing centered on a series of self-contained bathing units, each with a capacity of about 1,000 people, expandable to 2,000. The units will include parking, bathhouse, snack-bar and ocean or bay bathing. Of primary concern in the development of the ocean front bathing units is protection of the dunes and their vegetative cover. These dunes form an ocean barrier, and the protection and stimulation of natural plant growth is the only practical means to preserve and stabilize them. Consequently, the ocean bathing units should be located with great care and the access across the dunes strictly limited.

Extensive bayside development is proposed in the Indian River Inlet area and on Burton Island. Fishing and boating activities will be concentrated here. A fishing pier, charter boat concession areas, marina and boat launch facility, restaurant and recreation area are proposed. A focal point of development is a recommended activity center on Burton Island which will provide facilities for public meetings or other social events. Attendance experience will determine the ultimate development of this facility. It is suggested that a modest amount of permanent seating and parking be provided initially with grassed over-flow areas provided for park use.

It should be noted that camping is recommended for the Inlet area, however, this camping development should only be permitted where there is no risk of damage to the bay wetlands, such as would occur with filling and bulkheading of these areas for camping uses.

Activities provided for at Delaware Seashores:

Activity	Instant Capacity
Swimming	30,000
Picnicking	3,000
Boating, Fishing, and Related	3,000
Camping (Family)	2,000
Activity Center	2,500
Other Uses	500
Total	41,000

The capacities provided at Delaware Seashores will, of course, vary depending on the number of parking spaces and access areas provided. Each access area would provide for 1,000 people initially with expansion possible for accommodating another 1,000. At least twenty of these areas would be necessary as a minimum to provide a total capacity of 30,000 persons by 1980. This is considerably below the 66,000 instant capacity needed for 1980, although much of that demand will be accommodated in Rehoboth and other resort communities and at Cape Henlopen. It must be recognized that an attempt to accommodate all or any unsatisfied portion of the total demand, could result in a degradation of the ocean beaches to the point where their natural attractiveness and value would be lost. It is necessary, therefore, that a decision be made regarding the proportion of the ocean swimming demand that will be accommodated on Delaware Seashores and at Cape Henlopen.

Cape Henlopen State Park

Cape Henlopen State Park is a former military reservation acquired from the federal government in 1964 when it was declared excess land and no longer needed for defense. The area presently in the park is part of a larger reservation of which some 800 acres are still actively used for military purposes.

The Cape Henlopen area is recommended to be extensively developed with several distinct but interrelated areas of interest. A major focus will be on family camping located on the sand hill, in the former military garrison area.

Another major area will be the recommended ocean and bay bathing complexes located at five differnet positions on the ocean side of the park. A third activity of interest will be the proposed nature study complexes, one at the most northerly tip of the Cape, the other in sandy and marshy areas in the central portions of the park.

In addition to these proposed water-oriented activities, camping and nature study activities, facilities for fishing, field sports, tennis, and indoor recreation are recommended to round out the development of this park.

An area where more study is needed is the potential use of the former submarine observation towers which dot both Cape Henlopen and Delaware Seashores. At the very least these should be retained as stark reminders of the characteristics of pre-missile warfare. Appropriate signs could explain their use to the curious and the military historian. Reuse potentials could include construction of observation platforms on top of the towers to afford an unparalleled view of the entire Delaware coast. The tower at the tip of the park would seem particularly usable as it is topped by a structure formerly used for a weather station.

It is recommended that the area south of the present southern military boundary be designated "Wilderness Beach" with access only by foot or by beach buggy from the most southern ocean access area. This approach would reduce costs and would preserve some of the wild, unexplored character of this entire area. The plan further recommends that continued action be initiated through Delaware's congressional delegation to determine the actual extent of the property needed for military purposes on the Cape, if any, and to obtain for recreational use whatever part of the present military lands not needed for defense purposes.

Cape Henlopen State Park, at full development as proposed herein, will accommodate approximately 23,500 persons on a peak day, as follows:

Activity	Instant Capacity
Swimming	12,000
Picnicking	6,000
Camping (Family)	800
Camping (Youth)	200
Boating, Fishing, and Related	2,000
Active Recreational Areas	1,000
Hiking and Nature Activities	500
Other Uses	1,000
Total	23,500

Trap Pond State Park

Trap Pond State Park is located in the southern portion of the State, in Sussex County. It is the most remote of the State parks from the large population centers of Dover, Wilmington, and Newark, but it is easily reached via U.S. Route 13, a major north-south artery less than five miles west of the park. The park size, including proposed acquisitions and protective easements, is approximately 3,400 acres. Of this total, it is recommended that the present State ownership be expanded to 1,570 acres including Trap Pond and its immediate surroundings. The remaining area, 1,830 acres, is recommended for protective easements along James Branch and the former location of Hitch Pond. These areas are notable for their scenic and botanical value and are worthy of protection from improper development. If easements can not be obtained, fee simple acquisition is recommended. Fee simple title is also recommended if a future reconstruction of Hitch Pond is desired, provided this action would not destroy known stands of cypress in the present low lands.

Presently the most heavily developed of the parks in the State's system, Trap Pond emphasizes group use and extended-stay use, characterized by the provision of facilities for the handicapped and camping areas. In keeping with the site characteristics and the known demand for extended-stay facilities, recommended development includes facilities for camping, swimming, boating, picnicking, nature study, and hiking and bridle trails.

A major portion of the area around Trap Pond itself is recommended for campstie development. Two types of camping are recommended; family and youth camping. Supporting facilities such as a camper's beach, supply store and recreation buildings are also recommended.

A day use area centered around the existing beach and swimming area is recommended. It appears that the beach area is adequate for present and projected needs, however, because of the limited size of the swimming area, it is recommended that investigations be made of the water conditions to determine steps necessary for enlargement.

Some expansion of the picnic facilities is recommended as these are presently heavily used. In conjunction with this expansion, additional parking would also be required.

The relative flatness of the park, its wooded character and its expanse offer excellent opportunities for nature study, hiking paths, and riding trails. It is recommended that appropriate trails be designated and provided with interpretive signs and identification to allow for self-guided use. Private enterprise could be encouraged to provide an equestrian center adjacent to the park with provisions for regulated use of the trails for horseback riding.

A unique attraction at this park is the presence of the most northerly known stand of cypress tress in the United States. A portion of this stand is located in Trussum Pond, which should be maintained to serve as a focal point for an interpretive nature study program. Another portion of the stand is in the marshy remains of Hitch Pond. If it is determined that this stand is worth saving, then a possible reconstruction of Hitch Pond should be undertaken only if it is determined that it will not damage these trees.

Boating and fishing, always popular, are also proposed for this park as part of the day-use complex and on Trussum Pond.

Trap Pond State Park at full development will accommodate an instant capacity of approximately 10,225 people. This capacity is based on a low intensity of camping except in the youth camping areas. The density recommended for the family camping areas is approximately one unit per acre, with a number of units clustered together but separated from a similar cluster by a significant green space.

The breakdown of capacity by activity is as follows:

Activity	Instant Capacity
Youth Camping	200
Family Camping	1,200
Picnicking	2,000
Swimming	3,200
Boating, Fishing, and Related	725
Active Recreation Areas	1,600
Hiking and Nature Activities	300
Other Uses	1,000
Total	10,225

Development priority for this park is rather low as other areas are in closer proximity to urban areas and are subjected to heavier user demands. However, some improvements should be made as capital funds allow, especially to the camping areas and the beach. This park presently provides a variety of outdoor recreational opportunities in a quite satisfying manner; selective improvement will allow it to continue providing these opportunities.

Holts Landing State Park

The Division of Parks, Recreation, and Forestry presently administers 33 acres located on the Indian River Bay at Holts Landing. This area at the present time is improved by a boat launching facility, picnic tables, a small picnic pavilion, and a parking lot. The site once was a depleted State Highway borrow-pit which was recliamed for recreational uses.

Activities provided in this area are as follows:

Activity	Instant Capacity
Swimming	650
Boating, Fishing, and Related	180
Picnicking	560
Play Area - Recreation Area	50
Camping (Family)	400
Other Uses	100
Total	1,940

It should be noted that land in this area is recommended for acquisition as part of the State's program for protection of the inland bays and expansion of related recreational activities.

HISTORIC AND PREHISTORIC RESOURCES

The Comprehensive Outdoor Recreation Plan recognizes that resources other than those of a natural origin also are part of the recreation heritage and should be included in any comprehensive approach to providing a balanced recreational experience. While specific projections of the role of the historic and prehistoric resources in the total demand can not easily be derived, it is noted that two of the major outdoor recreational activities, weekend and vacation trips, traditionally include visits to these facilities by those who recognize the value of these resources.

As noted in the inventory section, the State of Delaware maintains one major archaeological site, the Island Field Site near Bowers, and 14 historic sites or buildings include the State Museum Complex. Evaluation of these resources by the appropriate agencies, Public Archives or Archaeological Board, indicates that many other sites are of significance. The State Archivist indicated that some 12 other structures were of major significance and should be part of the State's historic preservation program. The State Archaeologist has indicated a total of 528 sites of prehistoric value, a number of which are of considerable value and worthy of protection.

Neither the Public Archives Commission nor the Archaeological Board has provided outdoor recreation facilities at its sites, however, provision of such facilities by these agencies or on adjacent lands by another State agency would seem appropriate. In the case of prehistoric resources, certain controls are essential to prevent damage to, or removal of, the artifacts by persons not properly trained and authorized to inspect the sites. The important face, however, is that many of the prehistoric sites are in, or adjacent to, areas proposed for park or other outdoor recreation uses. Therefore, the existence of the resource should be closely coordinated with the area's development with proper facilities provided for public use and interpretation.

In regard to historic sites, some of these are also in areas designated for outdoor recreation use. These sites and structures would offer another experience to those available in the outdoor recreation facility. The Allee House, owned and operated by the State on part of the federal Bombay Hook Refuge, is an example of this joint use relationship.

Coordination of outdoor recreation efforts and those related to preservation of the historic and prehistoric resources can increase the opportunities available to the user of both facilities, as well as add to the significance of the location of the historic or prehistoric resources and also can protect these resources from the intrusion of adjacent undesirable land uses.

A Statewide Historic Preservation Plan, currently being prepared by the State Archives and Cultural Affairs Division of the Department of State, in addressing the designation and use of the State's historic resources. This plan will also discuss and make recommendations regarding recreational relationships. This plan will also provide for further expansion of the Registered National Historic Landmarks Program in Delaware. As noted in the Inventory Section, Delaware currently has six registered sites, however, many more buildings or sites have potential for listing. This effort will be in accordance with the objectives of the National Landmarks Program to establish a register of significant historic and cultural properties in Delaware and to develop a program for grants-in-aid to preserve these properties.

A Statewide plan for protection of the State's prehistoric heritage and possible creation of a Delaware Register of Natural Landmarks would be a valuable complement to the Historic Preservation Plan and is strongly recommended.

LONG-RANGE CONSERVATION

Some lands in the State are worthy of notation for their conservation value alone, regardless of any role they may ultimately play in meeting outdoor recreation needs. In some cases, these lands are critical for conservation or open space purposes, but their size, configuration, or location does not permit recreational use except of the most passive type. Many of the remaining wetlands on the State's inland bays are of this type. These areas are often small, scattered, and lack access; however, they contribute to the complex ecological relationships of the recreational resources, and hence are worthy of protection.

In another case, the areas could be of such a unique character as to require total preservation in their own right with little concession to the demands of recreational users. In this case, the importance of the area for preservation as a rare part of the natural or historic heritage far supercedes the recreation need. Yet, the area may provide for passive recreation in the form of nature study, bird watching, and unstructured hiking.

Still other areas are subjects for the State's long-range concern as recreational resources, but because of the interest of another jurisdiction or a private conservation group, the area has not been included in the State's acquisition program. The intention, in so noting these areas, is to indicate the desirability of State action to preserve the resource should other interests fail.

The Comprehensive Outdoor Recreation Plan recognizes:

1. The Brandywine Creek Stream Valley from Delaware 141 north to the Pennsylvania line, an area now partially controlled by Woodlawn Trustees and of significant recreational and open space value to the State, New Castle County, and the City of Wilmington.

2. The stream valley of the St. Jones River from the Delaware Bay to Silver Lake in Dover because of its relationship to the Capital Complex, the significance of historic buildings on its banks, and its recreational potential for a major Kent County Park.

3. The Cypress Swamp, a 7,300 acre rare wilderness of cypress, the remnants of a once flourishing forest covering most of Sussex County and now limited on the peninsula to this major stand.

4. The remaining wetlands of the Rehoboth, Indian River, and Assawoman Bays which are essential to the preservation of the ecology of these resources and the key to their continued recreational use.

5. The major pine forests near Ellendale and Redden which now are available for hunting and various passive uses and which have long-range recreational value. The State's interest in these areas should be limited to filling-in certain of the voids to achieve more complete systems for the eventual use of population concentrations in lower Delaware.
6. Areas of unique natural or historic character worthy of preservation in their own right.

These conservation areas have outdoor recreational value and could at some point be made available for certain recreational uses. The present State interest in the first three cases is limited to support of the interests and plans of other levels of government and private conservation groups. The State's interest in the latter cases is purely conservation, especially in regard to many portions of the wetlands on the inland bays.

The areas within these long-range interests include approximately 20,000 acres, lands preserved for their value in meeting recreation needs at a variety of levels, for completion of important open spaces, or for preservation of a unique link with the natural heritage.

RE-ASSESSMENT OF PRESENT OWNERSHIPS

As noted in the inventory section, the State has substantial recreational acreage in over 100 major ownerships throughout the State. In many cases, these ownerships are characterized by their lack of continuity with similar parcels, by small size or poor configuration, by a lack of relationship to a reasonable boundary, or by difficult access or control. Particularly noteworthy are some of the lands administered as State Forests and as wildlife areas.

One of the broad polices of this plan is to encourage development of outdoor recreation and open space systems and complexes with special emphasis on filling-in voids in present large ownerships. Consistent with this approach is the re-examination of each present ownership to determine if certain parcels could be better utilized or used for trade, lease, or sale to supplement the recommended acquisition program. This approach is also implied in specific policy Number 11 which provides for transfer of a parcel to a lower jurisdiction in order to achieve its outdoor recreation program.

In this regard, and with the constraints of the State's policy, each present ownership was evaluated in regard to its future contribution to the State's outdoor recreation system. This evaluation indicated that some 2,800 acres of presently owned land could be disposed of at some point in time, either for the use of another level of government or to offset other purchases. Among these lands were some 1,200 acres of land now administered by the Fish and Wildlife Division. In all these cases, the land so noted is an irregular parcel separated from the recommended major recreational complex by a road or other boundary. In all cases, these lands would not detract from the value of the area, and in some cases, they have excellent trading potential. One such area is the Primehook Wildlife Area, a 635 acre tract, completely enclosed by present and proposed federal acquisitions. This area could be the basis for a future trade with federal agencies for lands more appropriately located.

Other lands recommended for long-range disposition include 1,500 acres of forest holdings most of which average less than 200 acres in size. Examples of these areas are the scattered small parcels in the Blackbird Forest, the Owens tract, and the smaller parcels near Redden. These areas could be useful for county recreational facilities, or they could be sold to provide funds for acquisitions desirable to complete the Redden and Blackbird Forest Preservations.

By continued re-evaluation of the State's recreation ownerships and through selective dispositions to help offset some of the acquisition burden, the overall program will become more efficient and more responsive to the outdoor recreation need.

THE IMPACT OF THE STATE'S PROGRAM

The State's program, if fully implemented, would provide an instant capacity of over 140,000 persons engaged in a wide variety of outdoor recreation pursuits or about one half of the total projected instant capacity needed for all pursuits by the year 2000. This program would have a substantial impact on specific deficiencies noted in the Needs Section and on the efforts to preserve and protect the State's natural resources.

The program will provide for the acquisition and availability for public outdoor recreation use of some 83,800 acres by the year 2000, or 57,548 acres in addition to the present State inventory. These additional acres will include over 30,000 acres of additional protected bay and coastal wetland and 20,000 acres of additional woodlands. It will also provide for protection of almost 3,000 acres of impounded water for fishing and boating, including some 800 acres within 30 minutes of the State's most urban concentrations.

In terms of specific facility needs, the program would provide instant capacity for over 33,000 picnicking or about half the total projected instant deficiency for this activity. This level of action is probably appropriate as picnic facilities are a primary element of virtully every outdoor recreation area of all jurisdictions. Hence, much of the remaining need would be well met at county, local, and federal parks and areas.

Ocean swimming, another very popular activity in Delaware, is also well served by the proposed program. While the actions during the initial phases of the action program are designed primarily as an upgrading of present facilities the impact of State action during the plan period will be to greatly increase the capacity for this pursuit. The impact is especially noticeable in Cape Henlopen where the State actions would increase the capacity by almost 12,000 persons. Substantial additions are also programmed at Delaware Seashores State Park where capacity could be increased by as much as 30,000 users, primarily through new access points and expanded parking.

Swimming capacities in both ponds and in artificial pools will be increased by the State's actions through: the proposed pool or beach complex at White Clay Creek; the proposed pools at Brandywine Creek, at Lums Pond, and at Killens Pond; and by beach improvements at Trap Pond. These actions will increase the instant capacities by 16,000 users.

The areas available for hunting during the period would provide a substantial increase in future instant capacities to over 5,600 compared to the 2,300 present capacity.

Fishing and boating needs will also be accommodated by the fishing and boating facilities proposed in the State Parks and by continuation of the pond and marine access programs. These actions will increase instant capacities by over 13,000 users. Other uses will also be increased, especially hiking, camping, nature study, and active play, if the achievement of the recommended program is realized. Camping capacities, for example, would be increased by over 9,100 users.

It is expected that the users of Delaware's outdoor recreational areas will find many outlets for their energies in a setting which allows a highly satisfying experience consistent with preservation and efficient use of our natural resources.

FEDERAL LANDS AND PROGRAMS

The federal government has plans to acquire approximately 4,000 acres to complete its wildlife holdings at Bombay Hook and Primehook. These areas, when complete, will encompass over 26,000 acres under administration of the U.S. Department of the Interior, Fish and Wildlife Service. These two areas are part of a system of federal wildlife refuges established for the protection of migratory waterfowl along their Atlantic Flyways.

These areas are primarily nature study oriented, although, as noted in the assessment of State wildlife areas, some hunting is permitted on portions of both areas. The major recreational value, however, is derived from the opportunites to observe upland and wetland species, especially the large Canada goose population, in their natural habitat. Specifically, the opportunity for photography is outstanding on the Bombay Hook refuge. Other uses include fishing and picnicking with the former use by permit only.

Federal development at the wildlife refuges has been limited to those improvements necessary to preserve the wildlife habitat and to foster species management programs. The plan recommends continuation of this approach.

The federal government also owns approximately 5,000 acres along the Chesapeake and Delaware Canal under the jurisdiction of the U.S. Corps of Engineers. This land is primarily for spoils disposal from maintenance dredging of the C and D Canal. Its recreational use is limited by the nature of the hydraulic fill process, however, the land is open for hunting through a license agreement between the Corps and the State Game and Fish Commission. The area is also available for fishing, riding, and for nature study, and most of the Canal frontage is accessible by motor vehicle.

The Corps has long-range plans to devote portions of their land to recreational uses, mainly picnicking and fishing. The major areas so designated in Delaware include the south bank at Reedy Point and the north and south banks at Summit Bridge. In all three cases, major development will be access roads, overlooks, picnic facilities, and fishing piers. The north bank of Summit Bridge will be developed in accordance with the plans for Lum's Pond State Park. Based on total parking of 490 vehicles (sum of all three sites) these areas will accommodate approximately 1,200 persons. Preliminary development plans for these areas provide for about 250 picnic tables to serve these users. More extensive development of these federally-owned areas is not recommended as in most cases this would be detrimental to their natural value and the protection of wildlife. The area could be of great value for riding and walking if proper designation was provided to separate the recent fill from those portions that are safe for this use. Designated riding and walking trails would work well with the Lum's Pond development and would provide over 20 miles of shoreline (both sides of the canal) for this use. Development of the federal land in this manner would be of great value in meeting the State's outdoor recreation needs.

Finally, the federal government owns or has easements to lands in the Lewes-Cape Henlopen area. The largest of these is the lands owned by the federal government for Army and Navy purposes on Cape Henlopen. This ownership, some 823 acres, ±, bisects the State park and hampers effective outdoor recreation use of this valuable area.

The federal government, in the past, has offered portions of its holdings for lease by the State or local governments. In these cases the leases are typically at no cost to the lessee except for routine maintenance. The federal government retains title to property and the right to terminate the lease if the property should be needed for its original federal-use purpose. This type of inter-governmental transfer could be quite helpful in meeting outdoor recreation needs, especially in the affected local community. A good example of the value of these leases is the use of Corps of Engineers lands along the Lewes-Rehoboth Canal for community recreational pursuits in the City of Lewes. Similar arrangements have been considered by the City of Rehoboth.

Larger areas have been assigned to the State along the Chesapeake and Delaware Canal (although in this case the legal document is a license rather than a lease) and portions of the present Corps lands along this canal are recommended for inclusion in Lums Pond State Park. The plan encourages joint action of this type to provide for outdoor recreational use of these federal lands whenever such use would be consistent with the federal program.

Specifically, the plan recommends the continuation of federal acquisition and management programs at Bombay Hook and Primehook National Wildlife Refuges. These areas serve a vital purpose in the preservation of migratory waterfowl and provide passive recreational pursuits such as nature study, photography, and bird watching. During portions of the year they also provide more active recreation such as hunting and fishing.

The plan also encourages those federal actions necessary for navigation such as the efforts by the Corps of Engineers in the Chesapeake and Delaware Canal and in the Lewes-Rehoboth Canal. It also encourages the types of estuarine research currently being undertaken by this agency.

The plan does not, however, recommend or favor federal action which would establish new, additional federal wildlife or recreation areas. It is felt that the needs of the residents of Delaware and visitors can be more appropriately met through state and local jurisdictions with federal assistance provided through funding, research and planning.

One area where further federal involvement is desirable is through the Surplus Property Program whereby lands that are surplus to federal needs (wildlife, military, navigation, etc.) are transferred at reduced cost to the State. The federal government owns, for military use, over 823 acres in the Cape Henlopen Stae Park area, as noted above. This land is of considerable recreational value as the available ocean-shore is an extremely popular, and limited, recreational commodity. These lands appear to be only partially used by the military for defense purposes, while some portions are restricted to a limited number of military personnel for their recreational use. It is the opinion of this plan that areas suited for restricted military recreation could be better utilized for public recreation. The population to be served includes residents from Baltimore and Washington, areas of extensive urbanization. Further, the military appears to not respect the natural environment of the area as evidenced by their destruction of part of a large dune noted for its ecological value. As this area is presently used for military purposes, the plan can only express the serious interest of the State of Delaware in obtaining these lands for ocean-oriented recreational uses.

The federal lands, regardless of the level of the administrative agency, can markedly contribute to the State's inventory of outdoor recreation resources. A continuing coordinated program involving the State and the federal government can assure that the maximum recreational benefit is derived from these lands as well as their most efficient use for wildlife, navigation, or other primary federal purpose.

LOCAL NEEDS

The State's Outdoor Recreation Plan is not intended to specifically determine the types of, or sites for local recreational facilities as this is the proper action for county and municipal agencies. The State, however, does have a long term interest in the local system as the local needs are generally the most pressing. The financial constraints on local governments make achievement of these facilities difficult, and the needs, if unmet, will ultimately be translated into State-wide problems, such as over-crowding of State facilities or social unrest. The Plan has incorporated the standard of 25 acres of local recreation land per thousand population as used in the State's Comprehensive Development Plan in order to estimate the level of local need. From this level of need, programs can be evaluated, and a long range approach developed.

Using this standard and the 1980 and 2000 population projections, the total local recreational need, county and municipal, equals 17,872 acres and 25,000 acres respectively. The distribution of this total need by county and the net additional need after subtraction of present facilities are shown in Table 35.

Table 35 clearly indicates the urban concentration of the need for local recreational facilities. These same urban areas are also those most affected by high and rising land costs, by concentrations of low income and minority families, by serious demands on local funds for all services, and by problems of social unrest and dissatisfaction.

Previous State actions have taken at least three different forms: financial assistance; technical assistance; and transfer of land or facilities for local recreational uses. The results have not been uniformly successful.

State financial assistance to county and local governments was established in Chapter 58, Title 77 of the Delaware Code, "State Aid for Acquisition of Public Lands for Park, Recreation, and Conservation Purposes." This chapter, which became law on November 24, 1964, established a procedure for making State grants to the City of Wilmington and the counties according to a set formula based on an initial allocation of $503,750.00. At the option of the individual counties, the monies could be used by the incorporated municipalities. The initial distribution of funds provided for:

New Castle County	39.95%	$ 201,248.00
Kent County	24.03%	$ 121,051.00
Sussex County	24.87%	$ 125,283.00
City of Wilmington	11.15%	$ 56,168.00

These funds were to be used on a matching grant basis with the local unit of government providing 25 percent of the acquisition costs. As of July, 1969, this fund had not been actively used as the following funds remained to be spent:

Area	Funds Remaining	Percent of Total Remaining
New Castle County	$ 53,187.50	26.42%
Kent County	29,109.00	24.04
Sussex County	41,275.00	32.94
City of Wilmington	56,168.00	100.00
Total	$179,739.50	35.70%

TABLE 35

Local Recreation Inventory, Need and Projected Deficit

1980 and 2000

Community Development Area[1]	Present Inventory Acres[2]	1980 Population	1980 Recreation Need-Acres[3]	1980 Deficit Acres	2000 Population	2000 Recreation Need-Acres	2000 Deficit Acres
Wilmington (N. New Castle)	2,744	477,000	11,925	9,187	667,000	16,675	13,931
Middletown-Odessa	0	12,100	300	300	17,000	425	425
Smyrna-Clayton	38	17,150	428	390	24,000	600	562
Dover	76	62,200	1,555	1,479	87,000	2,175	2,099
Milford-Harrington	8	43,600	1,090	1,082	61,000	1,525	1,517
Georgetown	1	7,150	179	178	10,000	250	249
Seaford-Laurel	15	47,200	1,180	1,165	66,000	1,650	1,635
Millsboro-Selbyville	7	22,150	554	547	31,000	775	768
Lewes-Rehoboth	202	20,000	500	298	28,000	700	498
Bethany-Fenwick	26	6,450	161	135	9,000	225	199
STATE	3,117	715,000	17,872	14,755	1,000,000	25,000	21,883

1- Based on Community Development areas from Delaware Comprehensive Development Plan
2- Source: "Outdoor Recreation for Delaware, Inventory," August, 1968
3- Based on 25 acres per 1,000 population local recreation area standard

Two major reasons can be cited for the lack of a greater use of these funds. First, the funds appropriated under this act cannot be combined with federal grants in order to cover the entire cost of the acquisition. The local unit of government must provide 25 percent of the necessary funds from their sources while both State and federal grants can be used for the remaining 75 percent. The local units of government, especially in the most urban areas, are not induced by this program to accelerate their recreation program due to the demand for local funds for all other needs.

The second problem involves local park areas and their lack of development. Local officials have indicated that they would use the fund more freely if their present park areas were developed. Local officials are not willing to acquire more park land while the majority of the locality's present facilities are undeveloped.

The first problem can be largely overcome by a revision of the legislation to allow the local unit of government to match the State grant to provide the necessary 25 percent to match any federal grants. This would reduce the effective local share to 12.5 percent where federal funds are available. Amending this legislation would require deletion of a portion of Section 5808 of Chapter 58, Title 7. The plan recommends that this revision be instituted as soon as possible as this would free local governments from part of the burden of allocating limited financial resources among recreation and all other demands.

Assistance to local governments and to private non-profit organizations is also available from the State for use in recreation programming. This assistance, under the Recreation Assistance Fund Act, cannot be used for capital improvements. However, it can be used at the local level to establish park and recreation agencies, fund various recreational programs, establish outdoor nature study facilities, provide recreational opportunities for the aged and for the underprivileged, and to try experimental recreation programs previously not possible under existing funds. In general, this fund functions as seed money to encourage local recreational projects.

A total of 32 applications were funded in 1969 from the initial appropriation of $300,000, and the applications for 1970 have virtually depleted the 1970 appropriation. This record indicates both a major need and a proper role for State funds. It is possible that continuation of this "seed money" approach to recreation programming would permit reallocation of some of the funds of the local government and the local service clubs from programming to construction of needed facilities. As locally derived needs should be reflected in local park development, direct State involvement in that decision seems less reasonable than the program assistance role provided for in the Recreation Assistance Fund.

The State has in the past transferred outdoor recreation facilities and sites to the local level of government. These transfers have occurred when the existing facility assumed a character more like that of a local facility or when the site was unappropriate for a State facility due to its size or location. Examples of these transfers are the pending transfer of Brandywine Springs State Park and the administrative transfer of Beck's Pond Fishing Area, both of which will be operated by the New Castle County Parks Department. An example of a site transfer, also to the New Castle County Parks Department, involved the former Delcastle State Prison Farm now used for a park and county golf course, and developed with Land and Water Conservation Funds.

As indicated earlier in the reassessment of present ownerships, other parcels could be transferred to local governments for outdoor recreation uses as needed. Many of these parcels are well suited for local parks. These transfers are equivalent to a 100 percent grant as the locality needs no funds for acquisition. However, the local unit must assume maintenance costs for existing improvements and the problem of development remains. Nevertheless, this program does enlarge the local inventory and redistributes outdoor recreation facilities by function and responsibility. On this basis, the transfer program should be continued.

Most recently the State has provided a Local Park Land Assistance Program intended to serve as a grant-in-aid for county and local park land acquisition, development and related planning. Passage of this program marks the first time state aid has been available for local park development projects. These funds were appropriate to the Department of Natural Resources and Environmental Control, which in turn shall allocate the same among the county and local governments of Delaware according to the following population ratio:

(1) Sixteen percent (16%) to Kent County and local governments within Kent County ($80,000);

(2) Fourteen percent (14%) to Sussex County and local governments within Sussex County ($70,000);

(3) Seventy percent (70%) to New Castle County and local governments within New Castle County ($350,000).

As can be seen, the emphasis is for park development in New Castle County and its local governments, reflecting the concentration of population in these highly urban areas.

The funds appropriated by this Act will be allocated on a matching basis with the State share being not more than 50 percent of the total project cost. Any monies received from the State or Federal governments under any other program may be used in a program of a county or local government, along with the funds appropriated by this Act, but in no case can the local share be less than 25 percent of the total project cost.

Each applicant must provide evidence to the Department of Natural Resources and Environmental Control that local funds have been earmarked and will be expended for their matching share of a project's cost. No funds will be made available to a county or local government for park improvements which have a public-use expectancy of less than twenty (20) years. Documentation must also be provided by the applicant that has means by which to sufficiently operate and maintain such park improvements once completed.

It should be noted that the relatively small sum appropriated by this Act ($500,000) makes it impossible to consider very large development projects for funding, such as golf courses and large community centers. This is in keeping with the intent of the program to assist the development of facilities which meet the most pressing local needs.

Passage of this development assistance program comes after a number of years of consideration during which it was realized that the State's needs would prevent more than minimal use of the Land and Water Conservation Fund for local uses. With passage of this program, and given the fact that any state action serves both local and state users due to the size of the State, the Land and Water Conservation Fund will continue to be used primarily for state projects.

Delaware is now probably the only state to provide assistance to local governments for all phases of recreation. State programs provide for acquisition, planning, development and recreation programming. Now that a complete program is available, the magnitude of assistance and the procedures for such assistance should be annually reviewed and adjusted as necessary. It is too early for this plan to include programs for acquisition and development at the local level which reflect a comprehensive approach. This approach will be encouraged through the administration of State aid, will be presented in future updatings of the local action program, and will be a major area of interest in the urban recreation study proposed by this plan.

PRIVATE ACTION

A document such as this Comprehensive Outdoor Recreation Plan cannot easily determine the specific role and responsibility of private enterprise or of the private conservation group. In the first instance, the profit motive must be clearly recognized as part of any activity engaged in by private enterprise, and by virtue of this relationship, private enterprise will not provide facilities or services from which it cannot receive a fair return.

In the second case, the pure conservation motive is most clear, often to the point of serious limitation on use. It must be recognized and understood that these pure conservation motives are as reasonable as those of profit or use, that the efforts of the conservation groups may offer a chance of a more efficient allocation of public resources by allowing the use of public money to meet active needs as well as to preserve resources for future recreational needs.

In both cases, the actions of these two segments of the private sector can contribute to the satisfaction of needs if proper encouragement is given by public agencies and their programs. The following are offered as guides to stimulate such participation:

1. The State and other public bodies should carefully evaluate the services they provide and the possibility of the provision of identical services by the private sector. Particularly important is the minimization of unfair competition between public and private developments. The most noticeable example of this problem is the State's campground fee of $2 per night on the prime recreational lands with most utilities and other services - a charge which far undercuts the breakeven point for private campgrounds located on less choice sites. The result is marginal private operations, which largely serve to handle State overflow on peak days. Such as imbalance fosters poor management and a lack of private reinvestment.

2. Development and uniform application of appropriate laws, regulations, and ordinances upon both public and private recreational facilities is essential. The public unit should clearly set the example.

3. Full consideration should be given to the lease arrangement as is suggested in the policy portion of this plan. This study is of the opinion that the lease arrangement for many services can be especially beneficial in terms of reduced costs to the State. The lease arrangement may also be of value for many of the wildlife management needs, for interim use of future recreational lands, and for early provision of recreational facilities on a parcel prior to State development.

4. Various tax reduction or deferment plans can be explored which would encourage continued private recreational development or maintenance of an area. This could be particularly valuable in urban cases where rising land values and taxes place special burdens on recreational activities.

5. Cooperation should be paramount between the public and the private groups, commercial or non-profit, in regard to coordination of efforts, technical assistance, and in mutual exchange of data on demand, markets, costs, and management. Much of this cooperation could be achieved by increased contact between the public agencies and the various groups, committees, and organizations interested in conservation or recreation.

Action in this regard, along with a careful evaluation of all State fee proposals, should go far in stimulating a viable private interest, to the advantage of the outdoor recreation participant and to the economy.

As indicated in the assessment of responsibilities, privately owned and operated outdoor recreation facilities are vital to the satisfaction of the total demand. Recreation business, a "tourism," contributes considerably to the economy of the State. Its many forms range from actual recreational facilities such as marinas and horseback riding to a host of services including food, entertainment, and accommodations. Tourism is the chief industry in Sussex County, contributing heavily to the economy of Rehoboth Beach and other resort communities. It has been estimated that the tourist industry generated over 100 million dollars in trade in 1967. Clearly, the potential for private action is clear.

Private enterprise should accept its responsibility to provide those facilities for which it is best suited, including such things as deluxe campgrounds, motels and hotels, restaurants, and resort entertainment. It should, however, accept the coincident responsibility to work with government to create and enforce effective regulations to protect the natural resources on which the "recreation business" is built.

The private conservation group, on the other hand, can play an equally important role in providing the impetus for public action to protect these resources through their own acquisition and management, and in conducting a broad-based program of public education. In Delaware various groups and organizations such as Delaware Wildlands, the Sierra Club, various crime and social organizations, and sportsmen's clubs can continue to make a major contribution to the protection and wise use of the State's valuable natural resources.

IMPLEMENTATION TECHNIQUES

The need to protect the State's outdoor recreation resources is clear as is the need to make recreational experiences available for Delaware's residents and for visitor's. Preparation of a plan for State action is only half of the total effort necessary to protect these resources and provide for their use. The other half of the effort is to determine what means are available for implementing this plan and to select among those which offer the greatest potential.

Essentially, the State may make use of three broad powers: the power to acquire; the power to regulate; and the power to tax. The same powers can also be used at the local level, although in all cases their application must be within the context of legislative authorization. This section will evaluate the methods available for implementing the plan.

ACQUISITION

The process of "acquiring property" involves a mutual transfer of rights to the use and enjoyment of the property. If all the rights are transferred, the buyer gets fee simple title and exclusive use. Lesser rights may also be purchased, in which case the seller retains some ability to use the property subject, however, to the stipulations contained in the sale of certain rights to the buyer (i.e., life use, access, type of use).

Fee Simple Acquisition

Fee simple acquisition is the most costly, but it is generally preferable to lesser interests in situations where strategic land parcels are needed or where unrestricted use of and control over the property is essential to its efficient use. Lesser interests, however, come at a reduced cost and are of considerable value for preserving the existing character of a property or for preventing adverse future development. Delaware's present natural resource and outdoor recreation holdings are in fee simple because they are of strategic value in the outdoor recreation system and because the exclusive use feature is most condusive to management and development needs. It is conceivable, however, that lesser interests would be appropriate especially as part of the "surround" necessary to the overall environments of parks and wildlife areas.

Acquisition may take many forms, the most common being a direct sale or transfer which often takes the form of an option or agreement to buy at a future date with a subsequent transfer when funds are available at a later date. Other forms include use of a lease with an option, installment purchase at a preagreed price, purchase and leaseback, and purchase and resale with covenants. Under the lease with an option approach, the land is first leased for the proposed use with an option attached allowing the governmental agency to acquire the property if desired during the life of the lease at an agreed upon price. This technique is most useful when a private recreational facility is available for present purchase but funds for acquisition may be delayed. The lease allows for continuance of the facility and the option provides for a future purchase. This technique could be of greatest value at the local level where suitable private facilities may be available.

The installment purchase approach, which provides for staged sale, is useful where an individual wishes to sell a large holding but may wish to have the sale spread over a period of time for tax reasons. It is also valuable for the purchasing government as it allows for programming of funds over time while guaranteeing the eventual ownership. This technique has not been fully utilized in Delaware due to the administrative inability of one legislature to bind a subsequent one to appropriate acquisition funds. It has been used in some cases where a sale could be spread over a calendar or tax year if all the funds were available, and in this regard it is worthy of continued use.

The purchase-leaseback and the purchase-resale techniques are essentially similar. In both cases, the governmental body acquires the property in fee simple and then returns it to private use subject either to a lease agreement or to covenants in the resale. In the first case the property is acquired in advance of use but returned to a present use until needed. In the second, the property is no longer held by the government but future use must conform to the policies established in the area. Neither approach has had widespread application in Delaware as most of the acquisitions are in or planned for early recreation or wildlife uses. The leaseback concept in limited form has been applied, however, to some Game and Fish lands with success. Given the pressures for acquisition and the financial limitations for purchase and eventual development, the purchase-leaseback approach seems to hold some merit. The State could acquire the lands necessary for its outdoor recreation system but defer some of the cost by allowing the lands to be used for restricted private purposes under a lease. It is recommended that this approach be more fully utilized, especially in regard to forest lands, the wetlands along the inland bays, and for long-range development portions of the State parks.

The purchase-resale approach is of more limited value as it involves considerable administrative effort in a purchase and then a resale transaction and gains only limited rights in the property. The purchase of the desired rights alone would seem more appropriate. The approach could be of some value where limited rights are essential to recreational or other programs and where the original owner is not willing to sell less than fee simple title.

Usually fee simple title is acquired through negotiation between the governmental body and the seller at prevailing market price. In some, however, the necessity for the purchase may be constrained by an unwilling seller. This problem was touched upon in the Special Problems Section. In such cases, the governmental agency may use its power of eminent domain under which title is transferred to the government and the landowner is paid just compensation. The legalities, the delays with court action, and the "bad will" involved in the use of this technique make it relatively unattractive except in cases of very strategic parcels. It is recommended that in cases where the use of eminent domain appears unavoidable, the entire project be carefully reviewed to determine the actual value of the parcel in question.

Another form of acquisition is the "life tenancy." This procedure operates in much the same manner as a fee simple acquisition in that the title rests in the governmental body and the property owner is paid for his transfer. The major difference is that the former owner has the right to retain his residence on the property during his lifetime along with use of a reasonable area surrounding the residence. The remainder of the property is available for outdoor recreation use.

The main advantages of this approach is that the land is available prior to the death of the land owner when he would otherwise not be willing to sell due to a desire to remain in his long-time residence. The use of the life tenancy can be of considerable value in scheduling of land acquisition for a recreation area and it reduces the problems arising from estate settlement and negotiation with heirs. Its use should be considered wherever applicable to accelerate Delaware's program.

Lands may also be acquired through gift or bequest, foreclosure for tax reasons, and exchange. In these cases, the full title is transferred, often without cost or for nominal cost, and the land is made available for public use. While the State should not count on lands from these sources it should seek ways to stimulate desirable land gifts. A major promotion outlining the tax advantages of such gifts to their owners and the high value of such lands in helping the State meet its needs would seem appropriate in this regard. This promotional emphasis should extend to archaeological and historic building and sites as well as raw land as the need for preserving these resources is paramount to the need for unimproved land.

Tax delinquent lands could be taken for recreational uses, especially at the municipal or county level as these areas typically are within an urban area, are generally small in size, and frequently are located within residential subdivisions.

The acquisition of land by exchange has been examined in the reassessment of present ownerships. Essentially, this practice does not substantially increase the total inventory of land but rather redistributes this inventory in a manner more conducive to proper management and development. The use of this technique is strongly recommended in regard to Fish and Wildlife Areas where some parcels extend beyond a natural area boundary. To whatever degree possible, these could be exchanged for lands within the desired boundary thereby saving on acquisition cost and aiding in the utilization of the area.

Acquisition of Lesser Interests

The techniques applicable to fee simple title can also be used in the acquisition of lesser interests. Generally, however, the lesser interest is obtained in a sale agreement covering the appropriate interest desired without the necessity for options or leases. The major advantages to the acquisition of lesser interest, or easements, is that the governmental body can achieve its goal of preserving open space without the necessity of taking full title. The private landowner retains the title to the land and can use it for any use that does not violate the rights conveyed to the governmental body, and the property remains on the tax rolls.

The purchase of lesser interests can prevent adverse development, can guarantee the right of the public access, or can provide for the protection of a natural resource such as a watercourse or woodland. Where this limited protection or right of access is desired, the use of an easement may be of value, however, this technique is not without limitation. The acquisition of an easement involves a substantial outlay of funds at one time, often almost as much cash as would have been required for fee simple title. Further, the lesser interests are difficult to transfer at a later date should the government decide to no longer make use of its right of the property. These limitations have generally precluded use of the lesser interest approach. However, it should be evaluated by the natural resource agencies and by local governments where the cost is justified and where the purchase of such interest represents the extent of the governmental body's concern with the specific parcel. Appropriate use of this technique would be for protection of the character of the area surrounding a recreational facility or for guarantee of public use on a drainage project where no major recreation improvements are anticipated.

REGULATION

The power to regulate the use of land is typically delegated to county and municipal governments in the form of zoning and subdivision regulations. Additionally, some powers are retained by the State to regulate the effects of land uses on water and the atmosphere. These powers can be used to preserve open space and to protect the environment of outdoor recreational areas.

Zoning

Zoning regulates land use by establishing several kinds of districts and establishing the types and densities to which the land may be used. Zoning, however, does not assume that a use of the land produces a public benefit but rather assumes that such use is not injurious to the public. Zoning does, however, increase the amount of land available for outdoor recreation use in general, although portions of such land may be restricted to specific groups such as the residents within the district.

A number of types of zoning can be utilized depending on the purpose for the zone and the character of the proposed uses. Cluster zoning or average density zoning provides open space by retaining the overall density in a given area but allowing clustering of development for the most efficient use of land. The result has been open space for recreational use, although it is sometimes the unuseable left-over portions. Floodplain zoning preserves stream and river banks and prevents flood damage costs by prohibiting development in areas subject to flooding. Steep slope zoning may be used to retain property in excess of 20 percent slope in a low density development with restricted uses. The foregoing are more effective in preserving open space than the following, which are more susceptible to development pressures. Estate (or large-lot) zoning and agricultural zoning provide open space by 2-5 acre minimum lot sizes that protect farmlands and low-density residential use. Other zoning districts include: conservation districts to protect natural areas, forestry districts, resort districts, commercial recreation districts, shoreline districts, and airport and flight hazard zones. Professor Ian McHarg of the University of Pennsylvania proposes that riparian land districts, underground water resource districts, wildlife districts, and geologic districts be established prohibiting all incompatible uses. Most of these approaches are of greatest value to local governments; however, the State may wish to explore the use of flood plain and conservation zones as a means of protecting the areas it may wish to eventually acquire. Open space or conservation zoning involves considerable regulation of the use of land, generally limiting use to recreational or agricultural pursuits. This type of zoning, whether at the State or at a local level, has not been subjected to widespread use because of the difficulty in proving the value of the permitted uses and the adverse effect of the uses that are restricted. However, where such values could be state, such as in the wetlands, it is possible that this zoning would be enforceable. If so, the use of the technique would help protect resource lands, at least until they could be acquired.

The use of flood plain zoning is another means of protecting natural resources and providing open spaces. Many of the State's watercourses are still lined with undeveloped land, but development is encroaching in most areas in spite of the history of flood damage when these waters exceed their boundaries. Since floods are a natural occurrence, and since such flooding can be detrimental to the public welfare, it appears that institution of flood plain zoning could reduce the hazard and at the same time preserve open space. The resulting open space would be valuable for hiking and riding trails, nature study, and any recreational uses which do not disturb the natural character or require major improvements. While this tool tends to preserve lineal open spaces more suited to local recreational needs than State needs, the technique could be of value where State recreational areas encompass or abut a watercourse. The application of zoning would aid in the protection of the resource outside the State's facility so that private actions would not increase the risk of flood damage to the facility as well as protect the character of the facility's environs.

Official Map

Another method of protecting open space and recreational lands is the use of an official map. This device regulates development in areas officially designated for public uses. In most cases, it is limited to a specified time period, usually three years, after which the governmental body must purchase the property or forfeit control. The advantages of this approach include the ability to prepare plans without the immediate necessity of purchase and a period of time during which to assess development concepts or other aspects relating to the proposed use of the parcel. After further examination within the designated period, the government can either acquire the parcel or forfeit it. This approach could be very useful where a proposed take-line for a park has been established by master planning but where acquisition of the entire area is not immediately possible.

The authority to use this technique has been delegated to the local government in Delaware, although in at least one case the wording of the legislation does not provide for future acquisition. The ability of the State to use this device is less clear especially as its use would require legislative approval and would probably be limited to two year periods as one legislature may not bind a subsequent one.

Subdivision Regulations

Recreation and open space areas may also be provided through subdivision regulations. These controls typically require that a developer set aside land for recreational uses, and often they require some development thereon. Since this approach is an exercise of the police power, the requirements must be uniform, uniformly applied, and reasonable. At the present time no reasonable standards are available; however, most ordinances specify somewhere between 3 and 12 percent of the total developable area to be so dedicated. The wishes of the locality are the best indicator of the appropriate standard and should be reflected in the amendment of or preparation of subdivision regulations.

The areas obtained under these regulations are of the most local type; therefore, this technique has little relevance to the State's need. Proper administration at the local level, however, can link or distribute the areas to provide a variety of recreational experiences at little cost to the governmental body. Since these areas could provide for a substantial portion of the local need, the technique of requiring such dedication holds considerable value for these governmental units, and the use of the approach is highly recommended.

TAXATION

It is neither feasible nor desirable for public agencies to purchase all the land necessary to implement open space and recreation goals. Zoning is a useful tool as are other regulatory devices. However, proper tax policy can strengthen these techniques.

Under tax deferral procedure, taxes on privately held open space land may be regularly assessed but are deferred until the land is sold for development. Tax deferral must be based on a land use plan and supplemented by other land use devices such as zoning.

A tax rebate procedure allows a percentage of the taxes to be rebated each year as long as the open space regulations remain in force. If the zoning results in non-open space uses, all rebated taxes fall due, in some cases with interest. Tax exemptions are often authorized for land that provides a public benefit (private lands open to public hunting and fishing; hiking and riding trails; and historic sites). However, such tax exemptions must be tied to a land use plan. Tax concessions applied to property, inheritance, or income taxes, offer an incentive for land or easement donations.

Under the preferential assessment approach, land is assessed at its agricultural value in order to remove tax pressures on owners to sell at a speculative profit. By itself, this approach does not preserve open space but merely gives an owner a continuing tax advantage and does not impede eventual sale for development at considerable profit. It must be accompanied by regulations restricting land to open space uses; it must be tied to a land use plan; there must be provision for recapturing the land value increment achieved during the preferential assessment period; and the locality must be compensated for any loss of revenue.

A form of preferential assessment is presently conducted under the Delaware Farmland assessment law which determines the tax on agricultural lands based on the potential productivity of soil groups. The tax is determined upon this productivity when devoted to agricultural, horticultural or forest uses. This procedure, however, should be reviewed for its effectiveness in preserving open space, its relationship to area development plans, and in regard to methods of recapturing the deferred tax when the agricultural uses cease.

OTHER METHODS

In addition to exercising the power to acquire, to regulate, and to tax land, open space may be obtained through intergovernmental cooperation, such as the recreational use of water supply reservoirs and military installations. Another tool is private acquisition by groups such as conservation societies. Delaware has been successful in the past in the latter regard. However, more interest and assistance could be generated by closer cooperation between all natural resource agencies and the private conservation groups, including a more complete exchange of plans and programs.

Additionally, much evaluation is necessary relative to the use of present powers and their interpretation. Frequently, the authority provided under the powers to acquire, regulate or tax are not interpreted beyond the exact letter of the law. In essence, most governmental units have not fully utilized their power to negotiate in regard to the specific powers. Often an opportunity may exist whereby the exercise of a specific power may legitimately provide for the creation of an agreement or "deal" between the governmental agency and the landowner. Where this is possible the government's goals in achieving a recreational complex or other facility may be improved by a negotiated agreement. There is a great need to provide flexibility in administration so as to interpret the application of the tools at hand, provided such exercise is fair and within the broad intent of the law.

Further, the concept of compensation for reserved rights or for continuation of present uses should be fully explored. A recent proposal from the 1961 Penjerdel Open Space Conference would provide for compensable regulations whereby a landowner would be compensated for open space restrictions imposed under the power to regulate. This approach would relieve some of the harshness of present open space zoning by compensating a landowner for any value lost in keeping the property in open space or recreational uses. Furthermore, compensation could be provided to encourage private recreational programs and private facilities to remain available to the public where these are compatible with governmental purposes and goals. In both cases, the need for governmental action, especially in regard to direct purchase or development, is reduced, and the outdoor recreational need is more completely met.

Finally, the lease arrangement can be used to provide an outdoor recreational experience which could not otherwise be provided. While this approach may be handicapped by difficulties when the lease is due for renewal, the approach has some value when a facility is available to serve a present need but no funds are available for the direct provision of the service by the governmental body.

As can be seen, there are a wide variety of tools available for implementing outdoor recreation plans and programs. The critical issue is to determine which tools are most appropriate given the need, the administrative requirement for individual facilities, and the mechanics of establishing the machinery to make use of the particular approach.

SOURCES OF FUNDS

Funds for implementing the State's Outdoor Recreation Action Program and for local outdoor recreation facilities are available from federal and State sources. The federal funds are of the matching grant type with the State or locality required to provide some portion of the necessary total cost. The major federal programs which can be used for open space and outdoor recreation planning and acquisition include:

A. U.S. Department of the Interior:

1. Land and Water Conservation Fund - this fund, administered by the Bureau of Outdoor Recreation, provides 50 percent federal grants for planning, acquiring, or developing outdoor recreation areas. This plan is prepared under these funds. The State of Delaware receives annually some $500,000 which with State funds allows for acquisition of $1,000,000 of outdoor recreation land. Funds from this source have and will continue to play a major role in Delaware's program. These funds also may be transferred to local governments if the State desires, however, because of the existence of State aid programs for local open space acquisition (and the poor use record of these State funds) the Land and Water Conservation Fund monies have been essentially used for State acquisitions.

2. Federal Aid in Sport Fish Restoration Act and Federal Aid in Wildlife Restoration Act - these two acts provide 75 percent grants to the State Fish and Wildlife agency for acquisition, development, research, and restoration projects which are part of that agency's major programs. The funds, administered by the Bureau of Sport Fisheries and Wildlife, amounted to approximately $213,000 in the current fiscal year. Their main value is for development and restoration projects on the present and proposed wildlife and access areas.

3. Historic Preservation Act - this act, passed in 1966, is administered by the National Park Service and provides grants-in-aid for planning, acquisition, protection, rehabilitation, restoration, and reconstruction of historic properties. The State is currently preparing an Historic Preservation Plan under the provisions of this act.

B. U.S. Department of Housing and Urban Development

1. Historic Preservation Grants - these funds, equal to 50 percent of the cost of acquiring and restoring historic sites, are provided under the Housing Act of 1961 as amended. Grants are available to the State and localities for historic preservation purposes for those sites and structures which can meet the criteria established in the National Register. This program has not been funded in recent years.

2. Open Space Land Program - grants of up to 50 percent are available for acquiring, developing, and preserving open space land for recreational or other open uses. Additionally, grants of up to 90 percent may be made for projects that demonstrate improved or new methods of preserving open space. While the states may receive these funds they most frequently are used by local governments as the funds must be for provision of open space land as part of a comprehensive area development plan.

3. Urban Beautification Act - grants of 50 percent of the cost of landscaping, walks, shelters, lighting, benches, and other improvements are available to the State and to local governments for urban beautification and improvement programs. Ninety percent grants for demonstration projects are also available. These funds are of limited value for State use but could be of considerable use at the county and local levels.

4. Demonstration Cities Act of 1966 - this act provides a 20 percent grant for open space acquisition and development in metropolitan jurisdictions where substantial progress is being made in metropolitan comprehensive planning, programming, and coordination.

5. Neighborhood Recreational Facilities Program - federal grants of up to 75 percent of the costs of projects in designated redevelopment areas or two-thirds of the costs in other areas are available from this fund. The funds may be used for new construction or for expanding, acquiring additional area for, or rehabilitating existing recreational facilities. These funds should be of great value to local governments, especially in urban areas.

C. U.S. Department of Agriculture

1. Watershed Protection and Flood Prevention Act of 1962 - this act provides up to 50 percent of the acquisition and development of land in small watershed projects for flood prevention, irrigation, sediment control, drainage, fish and wildlife developments, and for public recreation. These funds are being used in the development of the Upper Choptank Watershed and the future Tappahanna Lake in Kent County.

2. Loans for Recreational Enterprises - funds are available to private landowners and farm associations for conversion of some farm acreage to recreational uses. While this is a loan program rather than a grant, private landowners in rural areas could use these funds to establish camping facilities or other recreational facilities to help meet the outdoor recreation demand. Other USDA programs include certain credits for development of income-producing recreation on private farms and guidance in the recreational development of private woodlands.

3. The Greenspan Program - this program under the Cropland Adjustment Program provides grants of up to 50 percent of the cost of taking land out of agricultural use for conservation or recreational purposes. The funds are available to both local and State agencies for acquisition, for developing wildlife facilities, for water and air pollution prevention, and for the establishment of land conservation practices. These funds have not been actively used in Delaware.

D. U.S. Department of Defense

1. Water Resource Development Projects - this program provides for the acquisition or leasing of lands at reservoir sites and other water resource projects and for development of adjacent recreational facilities. At non-reservoir sites this program may provide up to a 50 percent grant for development of recreational facilities but not costs of land or maintenance.

2. Beach Erosion Control - this program provides up to 50 percent of the construction cost for protecting publicly owned beaches and up to 70 percent for protecting public shore parks or conservation areas. No funds are provided for normal maintenance and repairs. Periodic beach nourishment may be approved for a specified time.

3. Navigation in River and Harbors - this program provides 50 percent of the first cost of small boat harbors used for recreational boating. Maintenance cost of the general navigational features is at Federal expense.

E. U.S. Department of Transportation

1. Highway Beautification - an amount equal to 3 percent of the federal funds apportioned for federal-aid highways is allocated for roadside development which includes controlled rest and recreation areas. Matching State funds are not required.

F. General Services Administration

1. Disposal of Federal Surplus Real Property - real property no longer needed by the federal government is offered for conveyance to local governments for public use, i.e., parks where the local agency must pay half its fair market value, as a wildlife conservation area, or as a public airport.

G. Water Resources Council

1. Water Resources Planning - grants are provided for comprehensive water and related resources planning.

State funds are also available for open space and outdoor recreation programs including the annual capital budget, the Advanced Land Fund for the Department of Natural Resources, the Open Space Assistance Fund for local recreational acquisitions, the Local Park Land Assistance Program for local development, and the Recreation Assistance Fund for local recreational programming. These have been discussed earlier in the section outlining the State's program and its relationship to local jurisdictions.

Both the State and the localities should fully explore these fund sources and make maximum use of the funds they provide. While, in many cases, the federal programs require a major planning commitment, the outdoor recreation need is critical at all levels and proper long-range planning should be a first priority of every unit of government. The failure to make full use of all available funding does not economize or retain local perogatives; it does, in fact cheat present and future Delawareans of their natural resource heritage.

ACTION PROGRAM

STATE OF DELAWARE

The major problems, issues and opportunities of the State and the programs undertaken to resolve these in almost every instance have relevance to outdoor recreation directly or to the environment in which the recreation experience occurs. As noted in the special problems section and elsewhere in the plan, Delaware must be prepared to meet many challenges, not only in terms of satisfying the demand for space and facilities but also in terms of maintaining and improving the environment.

The action program for the State of Delaware involves both projects and studies. In the first case, those reported herein are for the acquisition and development of outdoor recreation areas and facilities to meet the needs of present and future residents. In the second case, additional research is needed in many areas to further define the problems and to develop solutions. For some problems the solutions may be development of regulations to reduce man's continuing destruction of his environment, for others the solutions may involve delineation of additional facilities to meet specific needs, while for certain other issues the necessary work may require the formulation of State policies regarding land development, industrial promotion, or many other aspects of governmental responsibility. The sections which follow, outline these efforts both in regard to the quality of the environment and to outdoor recreation needs.

A. Scheduled Studies and Research Projects

The State of the State message of Governor Russell W. Peterson on January 14, 1970 included an executive dedication to the protection of the environment and to creation of a model system of parks and other recreational resource lands. Specifically, the Governor's message included the following goals:

1. To reduce crime
2. To provide more meaningful education
3. To win the war against pollution
4. To build a model State government
5. To provide more and better job opportunities
6. To protect, develop and enjoy our natural resources
7. To promote the health and welfare of all citizens
8. To provide safe, efficient movement of people and goods

As can be seen, two of the eight major goals for the State have to do with the environment and with the natural resources. The implementation of one of these goals, to prevent the pollution of the environment, includes actions to be aimed at forcing corrective measures on major pollutors, to evaluate all State facilities to make them a model for pollution control, to regulate automobile and truck exhaust emissions, and to enforce water quality and sewage regulations to clean up virtually every major stream in Delaware.

The implementation of the other goal, to protect, develop and enjoy the natural resources includes recommendations for increased capital funding for both acquisition and development, to prepare master plans for the State's recreational facilities, and research to provide for the proper development of the State's coastal areas.

In line with these goals, a number of studies have been proposed, some of which have been included in the State Planning Offices' work program for three fiscal years, 1971 through 1973. These are listed and briefly discussed below:

1. Environmental Deficiencies Study - The State has many areas of blight, trash, junk and worked out borrow pits. It also has pollution problems which markedly reduce the quality of the environment. Therefore, a study has been scheduled to begin in July, 1970 to determine the magnitude of these problems; and evaluate their impact on residential satisfaction, visual beauty including the setting for outdoor recreation, the economy, and public safety and welfare; and to develop policies, regulations and reuse proposal to reduce the adverse impact.

   The study will have special impact on outdoor recreation as it will examine many of the visual intrusions on the environment as well as propose programs for their removal. Of special interest will be the recreational re-use consideration for borrow pits, the appropriate screening of junk yards and similar areas, and the prevention of air and water pollution.

2. Urban Development Patterns Study - This study will examine the economics of new town development, the role of new towns in accommodating future growth, and the relationship between new and old towns. The study will result in State policies to guide future development in regard to the present communities and their capacity to grow and the need for newer urban concentrations. It is anticipated that this study will provide a better insight into urbanization in Delaware then is presently available in order that utility service, education, recreation, public health, and other functions may be more efficiently provided.

3. State Facility Master Plans - In order to more nearly optimize the utilization of State facilities, a master planning program was instituted several years ago. Projects to date include Lums Pond State Park, Killens Pond State Park, and Delaware Home and Hospital. The preparation of master plans for the State's outdoor recreation areas will be given a very high priority during the next five years. These plans will be a prerequisite for capital funding requests and will determine the best uses for the lands presently owned and those to be acquired. The primary emphasis will be for master plans of the two urban parks, White Clay Creek and Brandywine Creek, which now lack plans, and for master planning of the Cape Henlopen-Delaware Seashores Parks and the State's inland and coastal wetlands. Master planning will also be done for a number of the fish and wildlife areas as part of their orderly development. These plans will insure that Delaware's outdoor recreation resources will be most efficiently developed to meet the projected need in a manner consistent with sound resource protection and management principles.

4. Urban Recreation Study - an evaluation of urban recreation needs and programs will be undertaken beginning in fiscal year 1971. This plan recognizes that data on urban needs is seriously lacking. Urban recreation needs will be specifically studied. The work envisioned under this project includes determination of the demand for user-oriented activities, establishment of reliable standards against which to measure need, evaluation of the responsibilities for meeting these needs among various jurisdictions, and determination of programs, aid formulas, legislation, and other actions necessary to resolve the urban recreation need. An important aspect of this study will be consideration of the needs of urban residents for nature or resource-oriented recreation. This study will attempt to evaluate the degree to which urban resident's mobility on lack of mobility due to age, income, auto ownership, or physical condition constrains his use of large county and state recreation areas. This analysis will evaluate this situation and determine the role of the State in its solution. Further, the study will evaluate the effectiveness of local, state and federal programs to provide local recreation facilities and determine how the programs could be expanded or improved to increase the supply of local facilities.

5. Second Home, Recreation and Tourism Study - This study, anticipated to begin in fiscal year 1974. The study will determine a public sector "balance of payment" schedule to serve as a guide to future public policy regarding scope and location of the development of the State's ocean and bay areas for second houses, recreation, and tourism. It will attempt to:

    a. Identify second home, recreation, and tourism development trends in Southern Delaware.

    b. Analyze the overall social, economic, fiscal and land use implications of such trends.

    c. Propose alternative development patterns and the state policies regarding the provision of public services and utilities to support development in the area.

6. Marine and Coastal Affairs Study - The State Planning Office will participate in both the data collection and analysis necessary for preparation of plans for the environmental resources of the State as well as in coordination of the studies. Detailed economic research and evaluation regarding specific uses of these resources will come from the Economic Study program initiated under Delaware P-17. Detailed planning will also be done under the planning program of Kent County and as part of the updating of the State Development Plan. The end product of this study will be a plan and program for the wide allocation and use of the water and land resources of the Coastal Zone, considering the present use of the marine resources, the present quality of the resources, the potential for use of these areas, and the procedures for proper management and protection of the resources.

7. Recreation Demands/Needs Study - During the continuing recreation planning program a recreation demand study will be undertaken. This study will provide basic information necessary for future updating of the State's Outdoor Recreation Plan, including:

    a. calculating present and future demand levels for specific types of public outdoor recreation facilities

    b. calculating the value to consumers and to the State of the recreation benefits enjoyed

    The short-range impact will be the use of the data for further outdoor recreation planning under the State Facilities Program. However, with all inputs from this study, the urban development patterns study, and the preparation of the comprehensive planning model are complete, a rational policy towards competive land uses can be developed to be reflected in the Delaware Development Plan.

8. Historic Preservation Plan - the Planning Office is working with the State Archivist in the preparation of a State Historic Preservation Plan. Delaware, the "First State," has a historic heritage of which any State can be proud. At present, a number of historic homes, sites, structures and activities have been identified, however, no plan for preservation of many others has been prepared. Further, with few exceptions, the present historic facilities are not fully coordinated with other plans and programs, a situation which tends to miss multiple use values provided by the use of the historic site for or in conjunction with the provision of public services. This study will meet the State Historic Plan requirements of the National Historic Preservation Act and will:

a. establish criteria for evaluation of historic value
b. survey existing and potential sites
c. assign historic values
d. determine priority for acquisition and restoration
e. correlate sites with other plans and programs
f. prepare plans, programs, regulations, and budgets for protection of the historic resource

9. Delaware Development Plan - the original State Development Plan was prepared in 1967 as a guide for land development and public investment decisions. This Outdoor Recreation Plan, as well as other studies by the State Planning Office, are revisions to this original plan. Beginning in fiscal year 1971 the Development Plan will be reviewed and completely redone. It will provide a ten-year policy guideline for State action based on an extensive evaluation of recent development trends, emerging public policy and the availability of more current population and economic data. This plan will provide a reference for the annual updating of the Outdoor Recreation Plan and will relate the programs for action of the Outdoor Recreation Plan with the overall State needs and programs.

Other programs are currently underway or anticipated by the State's natural resource agencies. The following represent some of the projects and programs designed to protect the environment, to restore damaged resources, and to upgrade the quality of the outdoor recreation experience.

Current programs of Fish and Wildlife Division include research on the breeding and life cycle of the mosquito and biting flies, on non-carbon chemical methods of weed control and insect control, and on control of undergrowth on wetlands by use of methods other than the pollution-causing traditional burning. Additionally, this agency is studying pond construction and reconstruction programs in order to increase the availability of fresh water and salt water recreation areas. These actions, which are on-going research efforts, are aimed primarily at pollution control, especially the pollution caused by herbicides and insecticides, and at improving the quality of the recreation experience without an unnecessary description of the ecology.

Other efforts are underway by the Fish and Wildlife Division and by the Parks, Recreation, and Forestry aimed at pollution control and improvement of the quality of outdoor recreation. The Fish and Wildlife unit is conducting studies aimed at creating new propagation areas for oysters and for fin fish in locations where these areas have been destroyed or in locations where pollution can or has been controlled. Also, this unit is sponsoring research by the University of Delaware to determine the concentrations of D.D.T. and other harmful substance in shell-fish in order that proper regulations can be developed to attack the problem, protect the resource, and improve the recreational benefit of these resources.

The Parks Division has programmed funds in the 1971 Fiscal Year Capital Budget Program for feasibility studies for water and sewage along the Delaware Seashore Park and has programmed sewer and water facilities at Lums Pond, Delaware Seashore, and Trap Pond State Park. These efforts, by both Fish and Wildlife and Parks, are directed at reducing the risk of damage to the environment due to pollution and at increasing the enjoyment of the recreational experience to be provided.

Perhaps the major programs currently directed at protection of the environment are those now being undertaken or planned by the Environment Control Division. This relatively new agency has recently adopted strict water and air pollution control regulations and has begun a major enforcement program thereon. Major effort in this regard in the last year have included over 600 field inspections of potential air pollution cases and has initiated over 44 pollution control measures at private and public businesses and institutions. Additionally, air quality monitoring has begun with the installation of four primary and ten secondary monitoring stations. Further work proposed by the agency is a two year state-wide Air Resource Management Program funded by HEW. This program will be continued in the current fiscal year with other grants likely thereafter for initiation of the management scheme.

Similar efforts have been underway in regard to water pollution control. Active enforcement of the new pollution control regulations was begun along with continued surveillance and routine water quality measurements throughout the State. Additionally, septic tank regulations were adopted in October of 1968 and have resulted in a series of corrective actions to pollution problems caused by improper systems. Further effort have seen regulations developed for certification of waste water treatment plant operators. Considerable planning for regional treatment systems has also occurred and represents the most promising long-range attack on the problem of water pollution. A major regional system has been planned for the urban portions of Kent County and for the resort communities along the Delaware coast. These systems and the actions of the Parks Division in this area will have a tremendous impact on the problem of pollution in the Delaware Bay and the very threatened Inland Bays.

Finally, efforts are underway to develop Water Resources Regulations which will recognize; the public ownership of waters; regulate well construction and water usage; license well drillers; and, most importantly, develop policies on shoreline development, dredging, fishing and other subsequent activities.

The above represent the current programs of the Environmental Control Division and the State's natural resource agencies. Programs and projects of those agencies anticipated during the next six years include:

1. Delaware Bay Study - A water quality study to determine the importance of the Bay as a natural resource and to determine the Bay's true recreational potential

2. Oil Spill Regulations - New laws will be adopted and inforced to fix the responsibilities for all resulting damages. The completion date will be on or before July 1971

3. License for Septic Tank Installers - To become effective July 1971

4. Surveillance of off-shore waste dumping - the operation of all ocean going waste barges will be closely maintained for infraction of State Laws. Beginning date April 1970

5. Controlled Open Burning - Became effective in Kent and Sussex Counties in January 1970. It has been a law in New Castle County since July 1969

6. Motor Vehicle Emission Control - A bill has been prepared for legislative approval to prevent the operation of all vehicles which emit excessive smoke

7. State Comprehensive Plan for Air Quality Management - Planned for implementation by May 1970

8. Surface Water Hydrology Study - Stream gages will be utilized to obtain pertinent information on all significant flowing streams and a correlation established between such streams and those that have long historical records. This project is due to be completed in July 1971

9. A Study of the Use and/or Mis-use of Water for Irrigation Purposes - because irrigation constitutes a major demand on the available waters of the State, the acquisition of such quantitative data will allow knowledgeable planning of this valuable resource.

10. Master Water Use Plan - By July 1971, all the information from the Background Studies can be incorporated into a meaningful Master Water Use plan which in turn should be utilized for decision making on all future planned developments. It will be flexible enough to allow for continuous updating as further technology becomes available.

These projects plus the programmed $4 million per year of State assistance for capital investment in sewers and sewage treatment will do much to increase the knowledge of the natural resources and their current statue, to provide for regulations to protect the environment from future desecration, to establish on going programs to restore resources previously damaged, and to provide for full recreational use of the State's land, air and water.

Local actions in this regard are much more limited as most local jurisdictions lack the funds to engage in much environmental research and the problems mostly frequently extend beyond local boundaries, making State action necessary. Nevertheless, some local actions are identifiable. One action is the continuation of planning studies and programs in New Castle County for specific planning areas. In the course of these studies and the preparation of area development plans, the environmental quality will be analyzed as an input to developmental policy decisions. The environmental land use classifications developed by Professor Ian McHarg are being used for these studies. Also, the potentials and setting for open spaces and recreation is a vital element in these plans. Further, advance sewer and water quality and system studies are being conducted and the findings implemented to provide better service to the developing and the present areas. This effort will guide development consistent with the proper provision of utilities to avoid damage to the areas resources.

Another recent action is the application by the New Castle County Planning Department for an Office of Water Resources Research Grant (USDI) for a study of the Christina River Watershed. This study, which will take two years to complete at a cost of approximately $206,000, will evaluate all aspects of the water course, specifically: hydrologic, geologic and ecologic systems and interrelationships; analysis of the impact of transportation considerations, such as new roads or rail facilities; recreation value; water supply, quality and quantity; and legal and managerial structures as they relate to water resources problems in the Christina Basin. A model for decision making and an informational framework will be established to aid in future comprehensive planning of this area.

Action is being taken to establish long-range planning in the State's lower counties, Kent and Sussex, and completion of comprehensive plans, zoning and subdivision ordinance revisions, and environmental control regulations housing, plumbing, sewage disposal code, etc. is expected within the next two years. Further, Kent County is in the process of establishing its first recreation and parks agency, an action which will be of great value in determining that county's response to future growth, its recreational potential, and the actions necessary to prevent the desecration of its natural resources.

Regional actions are also underway to study the environment and establish policy frameworks to prevent continued degradation and correct the damage of the past. The most significant of the studies has been proposed by the Delaware River Basin Commission. This study to encompass the entire Delaware River Estuary will take approximately five years to complete at a cost of $2.6 million. It will evaluate the water quality of the estuary, determine the history of degradation in the River, evaluate the structure for control of the problem among the local jurisdictions, determine broad estuary use considerations, and recommend policies and procedures for protection of the Delaware River and its estuarine environment. This study will provide a valuable regional framework for the studies and programs anticipated and underway in Delaware to protect its shoreline, wetlands, and waterways.

FIGURE 35

Continuing Work Program

Study or Project	FY 71	FY 72	FY 73	After FY 73	Jurisdiction
1. Environmental Deficiencies Study	—				State
2. Urban Development Patterns Study	—				State
3. Facility Master Plans	———	———	———	———	State
4. Urban Recreation Study	———				State
5. Second Home, Recreation and Tourism Study				———	State
6. Marine and Coastal Affairs Study	———				State
7. Recreation Demand/Need Study				———	State
8. Historic Preservation Plan	———				State
9. State Development Plan	———	———			State
10. Fish and Wildlife Studies	———	———	———	———	State
11. Air Resource Management Program	———	———			State
12. Delaware Bay Study	———				State
13. Oil Spill Regulations	———				State
14. Surface Water Hydrology	———				State
15. Master Water Use Plan	———				State
16. New Castle Co. Planning District Study	———	———	———		County
17. Christina River Watershed Plan	———	———			County
18. Delaware River Estuary Study	———	———	———	———	Regional
19. Annual Updating of SCORP	———	———	———	———	State
20. Revision to Outdoor Recreation Plan	———	———	———	———	State

Finally, this Outdoor Recreation Plan will be updated annually to reflect the progress toward achieving its goals, to incorporate new information, to allow for the input of changes in policy or procedure, and to provide for an action program which adequately reflects the current outdoor recreation need. It is expected that the first updating will incorporate the urban recreation study findings to the date of the update plus a reporting of the State's efforts to develop state-wide rivers and trails systems as encouraged under P.L. 90-542 and P.L. 90-543. Toward the end of the period of eligibility established for this plan a full scale Outdoor Recreation Planning Project will be initiated to assure that Delaware will continue to provide the highest possible level of quality and quantity of outdoor recreation experience for its residents and quests.

B. Acquisition and Development - State of Delaware

In addition to studies, regulations, and State aid for environmental control, there is a great unmet need for land for recreational use and for development of present and future outdoor recreation lands for use. As noted, the State's program includes the acquisition of 34,950 ± by 1980 and an additional 22,600 acres ± by 2000 to provide an inventory of 61,000 acres ± and 83,000 acres ± in the two periods respectively.

Priorities

Not all of the program can be achieved at one time due to limitations imposed by the availability of funds, the administrative capacity to acquire and develop lands, and the time required for proper master planning. Therefore, priorities must be established which reflect the capacity of the State to carry out its program and the most urgent areas of need or concern.

The establishment of priorities requires a careful review of each type project and a commitment from the natural resource agencies to hold to the established priority until conditions warrant a revision. It should be noted that a review of the priorities based upon the record of the previous year is specified in each annual action program. The priorities themselves fall into categories within two groupings: acquisition and development.

Acquisition Priorities

As indicated in the description of the State's program, all acquisition projects have an "A" or first priority. This is in keeping with the realization that land for outdoor recreation use is continually lost to other uses, especially in the most urban portions of the State. The acquisition priorities fall into three categories which reflect the type of area and its specific acquisition program. The three categories are:

A.1 Urban Serving Recreation Areas:

This category is for the designation of acquisition projects for the urban-serving recreation areas such as White Clay Creek, Brandywine Creek and Lum's Pond State Parks, and such lands which clearly serve the residents of the urban portions of the State. It also provides for assistance to municipal governments and organizations for acquisition of areas which are of high potential for satisfying the center-city, urban need.

A.1 Protection of the Coastal and Bay Wetlands:

This category designates areas where the proposed acquisition is primarily in response to the critical need to preserve and properly manage the State's coastal wetlands for marine ecology purposes. While these areas may also provide for a variety of active and passive uses characteristic of other acquisition categories, the over-riding concern is the continued loss of the wetlands.

A.2 Implementation of the Overall Program:

This category provides for the majority of land acquisition projects in accordance with the acquisition schedule and the goals and objectives of the Outdoor Recreation Plan. Included are the acquisition of lands at the various State parks, forests, and wildlife areas, and the continuation of the programs of fishing pond and boat access areas.

A.3 Projects of Opportunity:

This category recognizes that desirable parcels must frequently be acquired when offered by their owner regardless of the scheduling of acquisition specified in the plan. Often, a delay in acquisition may result in permanent loss or in considerable difficulty and higher cost of purchase at a later date. This category also provides for flexibility in the State's program to allow for unique or unforeseen projects of great merit in meeting urban needs, protecting the wetlands and other vital resources, or otherwise fulfilling outdoor recreation needs. Hence, "projects of opportunity" include both opportunities for accelerated purchase and opportunities to improve the overall outdoor recreation experience through innovative and imaginative action.

Development Priorities

The plan recommends that the first priority be given to the development of those outdoor recreation areas which have a master plan and that preparation of a master plan be a first priority for all other outdoor recreation areas. When this priority is satisfied, all efforts should be directed at bringing each area, park or other type of facility, to a minimum level of development to allow public use and enjoyment. In this regard, funds should be expended in all areas rather than concentrated in one or two areas for major development with little development elsewhere. In the short range, however, the emphasis will be given to the urban parks and areas and to those outdoor recreation facilities which experience an exceptionally heavy demand.

The level of development recommended includes in parks: parking and access roads; picnic areas; designation of trails, unorganized play areas, and nature areas; initial development of game areas; basic sanitary facilities; and those facilities which are essential for present public use. Each park and its planned development need evaluation to determine the exact facilities to be provided within the intentions of this policy and the availability of funds.

In other facilities, the level of development will be that necessary to accomplish the management objectives plus parking, picnic, and other basic improvements to allow public use. Only basic improvements are anticipated in Wildlife Areas or Forest Preservations during the first ten years of the period, as well as the basic development necessary at ponds and marine accesses. In the pond and accesses, it is recommended that each site be completed in one development effort as their size and number would make this approach more economical than simultaneous small-scale efforts at each area.

The development priorities are based on two basic determinations: (1) all areas whether they be parks or forests or wildlife areas must have a master plan as a prerequisite for all but the most basic improvements; and (2) all parks and wildlife areas will be developed by 1980 to a level which allows public utilization consistent with the goals and objectives of this plan. Based on these determinations, the following priorities are established.

B.1 Master Plans:

As indicated, a master plan is considered a prerequisite for all but the most basic of improvements. Hence, the first priority will be for the completion of master plans for all of the State's areas.

B.2 Development in Urban-Serving Areas:

This category includes the initial development of the State's urban facilities to provide a variety of outdoor recreational experience for the greatest number of users. Achievement of the desired level of improvement for these areas should occur within the first six years of the program. This category includes the State urban-serving parks, as well as assistance in the development of high potential, urban areas by municipal governments.

B.3 Development of High Intensity Non-Urban Areas:

This category includes development programs in areas of heaviest recreational demand outside of urban concentrations as well as additional phased development in the urban parks. Achievement of the desired development for this priority should occur with the first ten years of the program.

B.4 Continuation of the State's Program:

This classification provides for development of areas of less intense use or for additional development of the urban recreation areas beyond that of priority B.2 or B.3. It also provides for development of areas in which the area function is being altered (i.e., from forest to park, etc.) due to previously unanticipated demand. Development in this classification will occur primarily after 1980 but could occur at any time during the program if funds are available, provided all higher priorities have been satisfied.

Development action priorities are shown in the following schedules. It should be noted that the level of capital funding indicated represents the desirable level and not necessarily the amount which can be funded. The amount actually funded during any capital budget preparation will depend on the overall fiscal ability of the State and the nature of other needs. It should also be noted that the FY 71 schedule includes projects funded in preceeding years which will be undertaken or completed in FY 71. Depending on the level of funding, the program could be accelerated as the indicated level of expenditure falls short of the full cost of the program. Development schedules are included only for the first ten years of the program as the availability of funding, the ability to undertake development, and the type of facilities desired are subject to considerable speculation after 1980.

SCHEDULE I

ACQUISITION FY 71

Level of Government: State of Delaware

Priority Category & Type of Area	Acres Land	Acres Water[1]	Acres Total	Estimated Cost[2]
A-1 Urban Serving Areas	500	0	500	$1,142,400
A-1 Wetland Protection				
Parks and Forests	235	0	235	1,893,000
Wildlife Areas	2,850	0	2,850	2,425,000
Estuary	1,325	0	1,325	2,650,000
A-2 Implement State Program:				
Parks and Forests	420	0	420	1,781,000
Wildlife Areas	1,350	0	1,350	404,390
Accesses & Ponds	170	65	235	153,225
A-3 Projects of Opportunity[3]	-	-	-	-
TOTALS	6,850	65	6,915	$10,449,015

Notes: See Schedule 8

SCHEDULE 2

Acquisition FY 72

Level of Government: State of Delaware

Priority Category & Type of Area	Acres Land	Acres Water[1]	Total	Estimated Cost[2]
A-1 Urban Serving Areas	350	0	350	$ 860,000
A-1 Wetland Protection				
Parks and Forests	95	0	95	757,400
Wildlife Areas	1,140	0	1,140	970,700
Estuary	530	0	530	1,060,400
A-2 Implement State Program:				
Parks and Forests	420	0	420	1,780,800
Wildlife Areas	1,350	0	1,350	404,390
Accesses & Ponds	170	65	235	153,225
A-3 Projects of Opportunity[3]	-	-	-	-
TOTALS	4,055	65	4,120	$5,986,915

Notes: See Schedule 8.

SCHEDULE 3

ACQUISITION FY 73

Level of Government: State of Delaware

Priority Category & Type of Area	Acres Land	Acres Water[1]	Acres Total	Estimated Cost[2]
A-1 Urban Serving Areas	350	0	350	857,600
A-1 Wetland Protection				
Parks and Forests	95	0	95	757,400
Wildlife Areas	1,140	0	1,140	970,700
Estuary	530	0	530	1,060,400
A-3 Implement State Program:				
Parks and Forests	420	0	420	1,780,800
Wildlife Areas	1,350	0	1,350	404,390
Accesses & Ponds	170	65	235	153,225
A-3 Projects of Opportunity[3]	-	-	-	-
TOTALS	4,055	65	4,120	5,984,515

Notes: See Schedule 8.

SCHEDULE 4

ACQUISITION FY 74

Level of Government: State of Delaware

Priority Category & Type of Area	Acres Land	Acres Water[1]	Acres Total	Estimated Cost[2]
A-1 Urban Serving Areas	180	0	180	$ 405,000
A-1 Wetland Protection				
Parks and Forests	95	0	95	757,400
Wildlife Areas	1,140	0	1,140	970,700
Estuary	530	0	530	1,060,400
A-2 Implement State Program:				
Parks and Forests	420	0	420	1,780,800
Wildlife Areas	1,350	0	1,350	404,390
Accesses & Ponds	170	65	235	153,225
A-3 Projects of Opportunity[3]	-	-	-	-
TOTALS	3,885	65	3,950	$ 5,531,915

Notes: See Schedule 8

SCHEDULE 5

ACQUISITION FY 75

Level of Government: State of Delaware

Priority Category & Type of Area	Acres Land	Acres Water[1]	Acres Total	Estimated Cost[2]
A-1 Urban Serving Areas	180	0	180	405,000
A-1 Wetland Protection				
Parks and Forests	95	0	95	757,400
Wildlife Areas	1,140	0	1,140	970,700
Estuary	530	0	530	1,060,400
A-2 Implement State Program:				
Parks and Forests	420	0	420	1,780,800
Wildlife Areas	1,350	0	1,350	404,390
Accesses & Ponds	170	65	235	153,225
A-3 Projects of Opportunity[3]	-	-	-	-
TOTALS	3,885	65	3,950	$5,531,915

Notes: See Schedule 8

SCHEDULE 6

ACQUISITION FY 76

Level of Government: State of Delaware

Priority Category & Type of Area	Acres Land	Water[1]	Total	Estimated Cost[2]
A-1 Urban Serving Areas	184	0	184	410,000
A-1 Wetland Protection				
Parks and Forests	95	0	95	757,400
Wildlife Areas	1,147	0	1,147	970,700
Estuary	531	0	531	1,060,400
A-2 Implement State Program:				
Parks and Forests	410	0	410	1,780,800
Wildlife Areas	1,337	0	1,337	404,350
Accesses & Ponds	172	54	226	153,225
A-3 Projects of Opportunity[3]	-	-	-	-
TOTALS	3,876	54	3,930	$5,536,875

Notes: See Schedule 8

SCHEDULE 7

ACQUISITION FY 76-80

Level of Government: State of Delaware

Priority Category & Type of Area	Acres Land	Acres Water[1]	Acres Total	Estimated Cost[2]
A-1 Urban Serving Areas	500	0	500	2,000,000
A-2 Wetland Protection				
Parks & Forests	0	0	0	0
Wildlife Areas	1,400	0	1,400	$ 600,000
Estuary	630	0	630	315,000
A-3 Implement State Program:				
Parks & Forests	605	0	605	1,089,500
Wildlife Areas	3,892	0	3,892	1,167,600
Accesses & Ponds	681	252	933	612,900
A-4 Projects of Opportunity[3]	-	-	-	-
TOTALS	7,708	252	7,960	$5,785,000

Notes: See Schedule 8.

SCHEDULE 8

ACQUISITION FY 80-2000

Level of Government: State of Delaware

Priority Category & Type of Area	Acres Land	Acres Water[1]	Total	Estimated Cost[2]
A-1 Urban Serving Parks	300	0	300	1,200,000
A-2 Wetland Protection				
Parks & Forests	0	0	0	0
Wildlife Areas	0	0	0	0
Estuary	770	0	770	$ 385,000
A-3 Implement State Program				
Parks & Forests	1,744	0	1,744	2,092,800
Wildlife Areas	18,189	0	18,189	5,456,560
Accesses & Ponds	638	962	1,600	1,054,450
A-4 Projects of Opportunity[3]	-	-	-	-
TOTALS	21,641	962	22,603	$10,198,810

NOTES:

1. Water area shown only for pond acquisition program.
2. Costs estimated in FY 70 dollars.
3. Projects of opportunity cannot be specifically identified, however, these projects will be accelerations of the acquisition schedule for periods 76-80 and 80-2000; i.e., a project of opportunity in FY 71-80 will be the acquisition of a parcel originally scheduled for a later period. The project of opportunity category does not apply in fiscal period 1980-2000.

SCHEDULE 9

DEVELOPMENT FY 71

Level of Government: State of Delaware

Priority Category	Type of Improvement	Cost
B.1 Master Planning	Development Plans	$ 100,000
B.2 Urban-Serving Areas	Utilities	750,000
	Day Use Areas	500,000
	Camping	100,000
	Roads, Parking, Entrances	500,000
B.3 High Intensity-Non-Urban Areas:		
	Utilities	200,000
	Day Use Areas	300,000
	Camping	100,000
	Roads, Parking, Entrances	50,000
	Wetland Improvements	50,000
	Ponds, Accesses	100,000
B.4 Continuation of State Program:		
	Utilities	50,000
	Day Use Areas	50,000
	Camping	-
	Roads, Parking, Entrances	-
	Wetland Improvements	20,000
	Ponds, Accesses	25,000
	Total Cost	$2,895,000

SCHEDULE 10

DEVELOPMENT FY 72

Level of Government: State of Delaware

Priority Category	Type of Improvement	Cost
B.1 Master Planning	Development Plans	$ 50,000
B.2 Urban-Serving Areas	Utilities	750,000
	Day Use Areas	1,250,000
	Camping	500,000
	Roads, Parking, Entrances	300,000
B.3 High Intensity-Non-Urban Areas:		
	Utilities	300,000
	Day Use Areas	300,000
	Camping	100,000
	Roads, Parking, Entrances	50,000
	Wetland Improvements	50,000
	Ponds, Accesses	100,000
B.4 Continuation of State Program:		
	Utilities	50,000
	Day Use Areas	100,000
	Camping	-
	Roads, Parking, Entrances	-
	Wetland Improvements	20,000
	Ponds, Accesses	25,000
	Total Cost	$3,945,000

SCHEDULE 11

DEVELOPMENT FY 73

Level of Government: State of Delaware

Priority Category	Type of Improvement	Cost
B.1 Master Planning	Development Plans	$ 50,000
B.2 Urban-Serving Areas	Utilities	500,000
	Day Use Areas	750,000
	Camping	500,000
	Roads, Parking, Entrances	200,000
B.3 High Intensity-Non-Urban Areas:		
	Utilities	300,000
	Day Use Areas	300,000
	Camping	200,000
	Roads, Parking, Entrances	100,000
	Wetland Improvements	50,000
	Ponds, Accesses	100,000
B.4 Continuation of State Program:		
	Utilities	100,000
	Day Use Areas	100,000
	Camping	-
	Roads, Parking, Entrances	10,000
	Wetland Improvements	30,000
	Ponds, Accesses	25,000
	Total Cost	$3,315,000

SCHEDULE 12

DEVELOPMENT FY 74

Level of Government: State of Delaware

Priority Category	Type of Improvement	Cost
B.1 Master Planning	Development Plans	$ 25,000
B.2 Urban-Serving Areas	Utilities	200,000
	Day Use Areas	750,000
	Camping	500,000
	Roads, Parking, Entrances	200,000
B.3 High Intensity-Non-Urban Areas:		
	Utilities	300,000
	Day Use Areas	500,000
	Camping	200,000
	Roads, Parking, Entrances	100,000
	Wetland Improvements	50,000
	Ponds, Accesses	200,000
B.4 Continuation of State Program:		
	Utilities	100,000
	Day Use Areas	150,000
	Camping	20,000
	Roads, Parking, Entrances	20,000
	Wetland Improvements	30,000
	Ponds, Accesses	25,000
	Total Cost	$3,370,000

SCHEDULE 13

DEVELOPMENT FY 75

Level of Government: State of Delaware

Priority Category	Type of Improvement	Cost
B.1 Master Planning	Development Plans	$ 25,000
B.2 Urban-Serving Areas	Utilities	200,000
	Day Use Areas	750,000
	Camping	750,000
	Roads, Parking, Entrances	200,000
B.3 High Intensity-Non Urban Areas:		
	Utilities	300,000
	Day Use Areas	500,000
	Camping	200,000
	Roads, Parking, Entrances	100,000
	Wetland Improvements	50,000
	Ponds, Accesses	300,000
B.4 Continuation of State Program:		
	Utilities	100,000
	Day Use Areas	150,000
	Camping	20,000
	Roads, Parking, Entrances	20,000
	Wetland Improvements	50,000
	Ponds, Accesses	100,000
	Total Cost	$3,815,000

SCHEDULE 14

DEVELOPMENT FY 76

Level of Government: State of Delaware

Priority Category	Type of Improvement	Cost
B.1 Master Planning	Development Plans	$ 0
B.2 Urban-Serving Areas	Utilities	100,000
	Day Use Areas	750,000
	Camping	650,000
	Roads, Parking, Entrances	100,000
B.3 High Intensity-Non-Urban Areas:	Utilities	100,000
	Day Use Areas	500,000
	Camping	200,000
	Roads, Parking, Entrances	100,000
	Wetland Improvements	50,000
	Ponds, Accesses	300,000
B.4 Continuation of State Program:	Utilities	100,000
	Day Use Areas	450,000
	Camping	60,000
	Roads, Parking, Entrances	50,000
	Wetland Improvements	50,000
	Ponds, Accesses	100,000
	Total Cost	$3,660,000

Schedule 15

Development 76-80

Level of Government: State of Delaware

Priority Category	Type of Improvement	Cost
B.1 Master Planning:		
	Development Plans	$ 100,000
B.2 Urban-Serving Areas:		
	Utilities	1,000,000
	Day Use Areas	1,750,000
	Camping	400,000
	Roads, Parking, Entrances	200,000
B.3 High Intensity-Non-Urban Area:		
	Utilities	500,000
	Day Use Areas	1,250,000
	Camping	100,000
	Roads, Parking, Entrances	50,000
	Wetland Improvement	150,000
	Ponds, Accesses	500,000
B.4 Continuation of State Program:		
	Utilities	100,000
	Day Use Areas	450,000
	Camping	100,000
	Roads, Parking, Entrances	50,000
	Wetland Improvements	100,000
	Ponds, Accesses	200,000
	Total Cost	$ 7,000,000

ACQUISITION AND DEVELOPMENT - LOCAL GOVERNMENT

Continuing acquisition and development programs are underway by county and local jurisdictions throughout the State. The most notable programs are being carried out in New Castle County, however, as Kent County is only now establishing a recreation department and Sussex County has expressed little interest in meeting recreational needs of its residents. The lack of action in these latter areas reflect more pressing concerns including regional sewage needs and the lack of comprehensive plans rather than a complete disregard for recreation. Programs are also underway in many of the communities, although the earlier lack of development aids stalled many such efforts. The following schedules outline the present and anticipated programs at the local level. (See Schedules 16 through 21).

As shown in these schedules, the New Castle County Parks and Recreation Department, which is responsible for the County Parks and the City of Wilmington Parks, has programmed over $14 million during the period FY 71-76. These projects would be of considerable value in meeting the outdoor recreation of the State's urban residents.

The other local action programs included in the schedules is that of the City of Dover, which anticipates expenditures of $350,000 for acquisition and $250,000 for development during the period FY 71-76. The absence of other programs does not imply a lack of local interest but rather a lack of an established park and recreation program. On going acquisition and development projects can be found in a number of localities, most notably Seaford in Sussex County and Newark in New Castle County.

Because of the limited size of the majority of the local governments in all three counties, establishment of acquisition and development priorities would be meaningless at present. Likewise, the New Castle County Parks Department program, while relatively extensive, does not lend itself to a meaningful assignment of priorities. The county appears to be following a system of land acquisition for parks to serve sub-county regions, i.e., parks of 150-200 acres in size, however, most of the scheduled development is in the most local or neighborhood areas. Basically the County is developing previously acquired neighborhood or community parks and acquiring sites for future larger parks as first priorities, while providing for master planning of the current acquisitions to allow for future development. This approach is in line with the State's approach and conforms with the recommended local policies.

SCHEDULE 16

Acquisition - FY 71-76

Level of Government: New Castle County,
Parks & Recreation Department

Area Designation	Acres	Anticipated Cost	Fiscal* Year	Source of Funds**
Brandywine Hundred	129.5	$1,648,000	1971	C-B
New Castle Hundred	120.0	655,000	1971	C-B
St. Georges Hundred	200.0	241,000		
FY 1971 Sub-Total	449.5	$2,544,000		
Pencader Hundred	120.0	630,000	1972	C-B
White Clay Creek Hundred	105.0	680,000	1972	C-B
Mill Creek Hundred	24.0	155,000	1972	C-B
FY 1972 Sub-Total	249.0	$1,465,000		
New Castle Hundred	216.0	$1,030,000	1973	C-B
Pencader Hundred	51.0	220,000	1973	C-B
Brandywine Hundred	23.0	196,000	1973	C-B
FY 1973 Sub-Total	290.0	$1,446,000		
Brandywine Hundred	35.0	$ 560,000	1974	C-B
St. Georges Hundred	60.0	120,000	1974	C-B
White Clay Creek Hundred	20.0	100,000	1974	C-B
FY 1974 Sub-Total	115.0	$ 780,000		
FY 1975 Sub-Total	0.0	0	1975	C-B
FY 1976 Sub-Total	0.0	0	1976	C-B
Total	1,103.5	$6,235,000		

*Fiscal Year 71 includes some carryover projects from FY 70
**C-B - County Bond. Some funding may also come from State aid under the New Castle County share of the Local Open Space Fund.

SCHEDULE 17

Development - FY 71-76*

Level of Government: New Castle County

Area Designation	Anticipated Cost	Source of Funds
FY 1971		
Banning Park	$ 132,000	County Bonds
Delcastle Recreation Area	442,000	County Bonds
Green Hill Public Golf Course	10,000	County Bonds
Canby Park	189,000	County Bonds
Rockford Park	5,000	County Bonds
Brandywine Park	277,000	County Bonds
Alapocas Woods	5,000	County Bonds
Maintenance Center	5,000	County Bonds
Total	$1,065,000	
FY 1972		
Banning Park	$ 369,000	County Bonds
Canby Park	162,000	County Bonds
Rockford Park	164,000	County Bonds
Brandywine Park	64,000	County Bonds
Alapocas Woods	125,000	County Bonds
Sellers Park	76,000	County Bonds
Becks Pond	32,000	County Bonds
Brandywine Springs Park	39,000	County Bonds
Total	$1,031,000	
FY 1973		
Delcastle Recreation Area	$ 267,000	County Bonds
Rockford Park	443,000	County Bonds
Total	$ 710,000	

* Fiscal Year 71 includes some carryover projects from FY 70.

SCHEDULE 17 (Continued)

Area Designation	Anticipated Cost	Source of Funds
FY 1974		
Harmony Brook Park	$ 123,000	County Bonds
Llangallen Park	525,000	County Bonds
Total	$ 648,000	
FY 1975		
Delcastle Recreation Area	$ 501,000	County Bonds
Total	$ 501,000	
FY 1976		
Delcastle Recreation Area	$ 369,000	County Bonds
Total	$ 369,000	
Total Development Program	$4,324,000	

Source: Preliminary Capital Improvement, New Castle County Department of Parks and Recreation

SCHEDULE 18

MASTER PLANNING - FY 71-76*

Level of Government: New Castle County

Area Designation	Anticipated Cost	Source of Funds
FY 1971		
Brandywine Hundred	$27,000	County
Pencader Hundred	7,000	County
TOTAL	$34,000	
FY 1972		
Brandywine Hundred	$20,000	County
St. George's Hundred	17,000	County
New Castle Hundred	10,000	County
TOTAL	$47,000	
FY 1973		
Pencader Hundred	$15,000	County
White Clay Creek Hundred	15,000	County
Mill Creek Hundred	7,000	County
TOTAL	$37,000	
FY 1974		
New Castle Hundred	$20,000	County
Pencader Hundred	10,000	County
TOTAL	$30,000	
FY 1975		
Brandywine Hundred	$10,000	County
TOTAL	$10,000	

* Based on a preliminary capital improvements program from the New Castle County Parks & Recreation Department.

SCHEDULE 19

Development - FY 71-76

Level of Government: Wilmington

Project	Fund	FY 1971	FY 1972	FY 1973	FY 1974	FY 1975	FY 1976
Model Cities Program	Federal	$ 95,000	$ 80,000	$ 66,000	$ 66,000	$ 66,000	$ 67,000
Kruse Pool Renovations	Bonds	158,000					
Eden Pool Renovations	Bonds	37,000					
Eden Park Athletic Fields	Bonds	19,000					
Price Run Area	Bonds	71,000					
City Wide Basketball Courts	Bonds	25,000	25,000	25,000			
Kirkwood Basketball Courts	Bonds	16,000					
Neighborhood Development Program	Bonds	30,000	30,000	30,000	30,000	30,000	30,000
Landscape Development Program	Bonds	60,000	60,000	60,000	60,000	60,000	60,000
City Wide Park Safety Lighting	Bonds	25,000					
Brown Park Atheltic Field	Bonds	89,000					
Eden Park Pavilion Construction	Bonds		32,000				
Rodney Square Renovation	Bonds		89,000				
Price Run Athletic Field Lighting	Bonds			89,000			
Comfort Station Improvements	Bonds			45,000	30,000	30,000	
Lincoln Park Facility Lighting	Bonds				89,000		
TOTAL		$625,000	$316,000	$315,000	$275,000	$186,000	$157,000

Source: Preliminary Capital Improvement Program for Wilmington Parks, New Castle County Department of Parks and Recreation.

SCHEDULE 20 *

Acquisition - FY 71-76

Level of Government: Local, City of Dover

Area Designation	Anticipated Cost	Fiscal Year	Source of Funds
Lincoln Park	$ 50,000	1971	Local, State
Additional Lincoln Park Acquisition	25,000	1972	Local, State
North West Area	200,000	1973	Local, State
Tot Lots	25,000	1974	Local
Tot Lots	25,000	1975	Local
Tot Lots	25,000	1976	Local
TOTALS	$350,000		

SCHEDULE 21*

Development - FY 71-76

Level of Government: Local - City of Dover

Area Designation	Anticipated Cost	Fiscal Year	Source of Funds
Tarburton Park Tract	$ 25,000	1971	Local
Lincoln Park Development	50,000	1972	Local
North West Area	25,000	1973	Local
North West	50,000	1974	Local
North West	50,000	1975	Local
North West	50,000	1976	Local
TOTALS	$250,000		

*Anticipated Program - not verified by a capital program or budget

Source: Planning Department, City of Dover

FEDERAL PROGRAMS

The only federal agency whose programs include significant outdoor recreation development is the Bureau of Sport Fisheries and Wildlife which operates the Bombay Hook and Prime Hook National Wildlife Refuge. These two areas provide over 22,000 areas of wildlife habitat for management purposes and for recreation use such as hunting, photography, birdwatching, hiking, nature study, and dog trails. The primary emphases at both, however, is management and all recreational development is a subsidary function.

Due to funding problems, neither refuge is scheduled for substantial acquisition or development and, hence, no capital program was available. Should funds become available the primary emphases will be for completion of the acquisition program at Prime Hook. This program would add some 3,500-3,800 acres to the refuge at an approximate cost of $1,000,000.

Development at both refuges, if possible, would be in accord with the master plans for these areas as part of a $1,000,000 plan developed about 1965. Approximately $250,000 of this program would be for Phase I which includes provision of a visitor center, observation towers, additional nature trails, and access roads at Bombay Hook. It is possible that some of this development could be funded in the 1974-76 period.

This acquisition and development programs of this agency are consistent with the State's programs and would provide a valuable complement to the State facilities.

The acquisition program at Prime Hook Refuge has been recommended to the Bureau of Outdoor Recreation for assistance under funds from the Land and Water Conservation Fund which may be available for federal acquisitions. This plan strongly recommends support for the necessary acquisitions.

Another federal agency has some impact on Delaware's outdoor Recreation program although the impact may not be felt for some time. The U.S. Corps of Engineers has jurisdiction over the Chesapeake and Delaware Canal and the 5,000 acres which surround this waterway in Delaware. These lands are primarily for hydrologic spoils disposal, however, they will ultimately possess recreational value. Presently, they are licensed for hunting and other passive uses and additional uses have been suggested for portions of the area no longer being used. The Corps has plans for recreational development at Reedy Point and at Summit Bridge, the latter serving in conjunction with the development of Lums Pond State Park. These plans envision picnic areas, facilities, fishing piers, boat docks, overlooks, and trail systems. While this program may also suffer from funding problems, the facilities envisioned would be of considerable value in helping to meet Delaware's outdoor recreation needs.

PLAN MAINTENANCE

A plan is nothing more than a coordinated, comprehensive look into the future based on the conditions, data and trends evident at the time of its preparation. If these change over time, the plan will no longer adequately portray the current setting for outdoor recreation and, hence, will be of limited usefulness. Therefore, the plan should be periodically updated to reflect progress made since the initial preparation. Each update should re-evaluate goals, objectives, policies, and priorities in light of changes in the quantity and type of outdoor recreation facilities demanded. The update must also reflect shifts in governmental attitudes, especially as related to their respective responsibilities, and changes in administrative and fiscal capabilities.

It is recommended that this plan be regularly updated on a five year schedule augmented by annual supplements reflecting the impact of acquisitions on the overall need. The responsibility for these updates should remain with the State Planning Office as this agency is best able to retain the comprehensive approach necessary for review of the Outdoor Recreation Plan and other plans, reports, and studies directed at the effective guidance of development throughout the State of Delaware.

The public must also participate. It must make known its desires regarding the quality, quantity, character, and location of the facilities. This responsibility is paramount. Governments and the plans they produce are intended to provide a service to the public. In the final analysis, the citizens' responsibility requires that they make known their desires, support the plans and programs, and preserve and protect their natural heritage. In so doing, they will provide maximum outdoor recreation for themselves and a chance for future generations to provide for their needs in an even more urban environment.

APPENDICES

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Report No. 6 — Hunting in the United States - Its Present and Future Role
Report No. 7 — Sport Fishing - Today and Tomorrow
Report No. 10 — Water for Recreation - Value and Opportunities
Report No. 11 — Private Outdoor Recreation Facilities
Report No. 15 — Open Space Action
Report No. 16 — Land Acquisition for Outdoor Recreation - Analysis of Selected Legal Problems
Report No. 17 — Multiple use of Land and Water Areas
Report No. 19 — National Recreation Survey
Report No. 20 — Participation in Outdoor Recreation: Factors Affecting Demand Among American Adults
Report No. 21 — The Future of Outdoor Recreation in Metropolitan Regions of the United States
Report No. 22 — Trends in American Living and Outdoor Recreation
Report No. 23 — Projections to the Year 1976-2000, Economic Growth, Population, Labor Force and Leisure and Transportation
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LEGAL AUTHORITY
OUTDOOR RECREATION PLANNING

STATE PLANNING OFFICE

Planning

The Delaware State Planning Office was created under Title 29, Chapter 49, Subchapter I of the Delaware Code, annotated which provided for the Delaware Planning Act. (53 Delaware Laws, Chapter 184, effective September 5, 1961.) This agency, which serves as the staff agency for planning matters in the Executive Department, was created upon recognition that state-wide planning:

> is essential to the orderly growths and development of the State; to promote the health, safety and general welfare of its citizens; to effectuate a balanced, integrated program for the effective employment of the natural and other resources of the State; to anticipate and to prepare plans for meeting problems in the areas of highways, housing, water supply, sewage, air and water pollution, recreation, agriculture, urban and metropolitan growth, air, water and surface transportation, education and culture, preservation of historical sites, industrial and commercial development, traffic safety, fishing, boating, and other matters; and to secure through planning the economical and efficient expenditure of tax revenue.

Federal Aid

The State Planning Office also has been designated as the appropriate agency for the administration of certain Federal assistance programs within the scope of its authority and duties. Section 4913 of the State Planning Act accords the authority of the Planning Office to seek and administer Federal aid of the kind provided by the Land and Water Conservation Fund Act of 1965.

Section 4903 provides for the effectuation of a "balanced, integrated program" to include as one of its elements plans for Delaware's needs with regard to recreation. Section 4913 provides that in carrying out these provisions:

> The State Planning Office, official metropolitan and regional planning agencies, official governmental planning agencies for areas where rapid urbanization has resulted or is expected to result from a Federal installation, towns, cities, other municipalities and counties, may apply for, and accept and expend grants from the Federal Government and any other public or private sources for the purposes of this chapter, and contract with reference thereto, and enter into other contracts (including interstate compacts with respect to planning work involving an adjoining State or States where such compacts have been authorized by law by the adjoining State or States), and exercise all the other powers necessary to carry out the purposes of this chapter. Added 53 Delaware Laws, Chapter 184, effective September 5, 1961.

Land and Water Conservation Fund

On October 2, 1964 Governor Elbert Carvel designated the Director of the Delaware State Planning Office as State Liaison Officer to serve in that capacity with the Bureau of Outdoor Recreation for purposes of administering the Land and Water Conservation Fund. Since that original designation, the Director of the State Planning Office has been redesignated as the Liaison Officer by former Governor Charles L. Terry on July 16, 1968. In recognition of the provisions of the State Planning Act and the appropriateness of the State Planning Office as the legal organization for administering the Land and Water Conservation Fund in Delaware; Governor Russell W. Peterson reaffirmed the designation of the Director of the State Planning Office as State Liaison Officer with the Bureau of Outdoor Recreation on February 26, 1969.

OPINION OF THE ATTORNEY GENERAL REGARDING AUTHORITY OF THE STATE PLANNING OFFICE CONCERNING FEDERAL CONSERVATION FUNDS

64-078

December 16, 1964

REQUESTED BY: Mr. John A. Bivens, Jr., Director, State Planning

OPINION BY: David P. Buckson, Attorney General

QUESTIONS:

1. Does the Delaware State Planning Office have the legal authority to represent and act for the State in dealing with the Secretary of the Interior for the purposes of the "Land and Water Conservation Fund Act of 1965?"

2. Does the Delaware State Planning Office have the legal authority to receive and administer Federal funds for payment of projects carried out in accordance with the "Land and Water Conservation Fund Act of 1965?"

The answer to both questions would appear to be in the affirmative. Indeed, the legislation which created the Delaware State Planning Office answers the instant questions in that it appears the intent of the General Assembly was that your agency should administer federal assistance of this very nature. 29 Delaware Code, Chapter 49, Sections 4901-4913.

The Delaware statute cited immediately above is called the "Delaware Planning Act;" it creates the State Planning Office and delimits its powers and duties. By this statute, your agency is accorded the authority to seek and administer federal aid of the kind provided by the Land and Water Conservation Fund Act of 1965.

The Federal Act states as one of its purposes the preservation "of such quality and quantity of outdoor recreation resources as may be available," more specifically by "providing funds for and authorizing Federal assistance to the States in planning, acquisition and development of needed land and water areas and facilities."

Similarly, the purposes of the Delaware Planning Act include the effectuation of "a balanced, integrated program for the effective employment of the natural and other resources of the State," such plans to include Delaware's needs with regard to "recreation," "water," etc. (Section 4903).

In carrying out these purposes, the Delaware Planning Act unequivocally authorizes the State Planning Office to seek federal aid; the provisions of Section 4913 of the Act are particularly pertinent and are as follows:

"The State Planning Office, official metropolitan and regional planning agencies, official governmental planning agencies for areas where rapid urbanization has resulted or is expected to result from a Federal installation, towns, cities, other municipalities, and counties are authorized to apply for, and to accept and expend grants from the Federal Government and any other public or private sources for the purposes of this Chapter, to contract with reference thereto, and to enter into other contracts (including interstate compacts with respect to planning work involving an adjoining State or States where such compacts have been authorized by law by the adjoining State or States), and to exercise all the other powers necessary to carry out the purposes of this Chapter."

Moreover, see with like effect Section 4908, which delineates the powers and duties of the State Planning Office; Subsection (j) provides in part that the State Planning Office shall "Accept and receive, in furtherence of its function, funds, grants, and services from the federal government or its agencies—."

From the above it seems clear that your agency can legally seek and accept the kind of federal aid provided by the Federal Act in question. Furthermore, I think it implicit in the above-quoted language that the State Planning Office may represent and act for the State of Delaware in dealing with the Federal Government under this conservation bill. Note also that the Governor's designation of your agency to act in this capacity is in conformity with the following relevant language of Section 5 (f) of the Land and Water Conservation Fund Act of 1965:

"Payments for all projects shall be made by the Secretary to the Governor of the State or to a State official or agency designated by the Governor or by State law having authority and responsibility to accept and to administer funds paid hereunder for approved projects."

At a number of other points, the Delaware Planning Act, in setting forth the planning responsibilities of the State Planning Office, refers to cooperation and collaboration with appropriate federal agencies (Section 4908 (a), (b), (g), (k), Section 4911). These references tend to reinforce the conclusion that the Delaware State Planning Office is authorized to represent and act for the State of Delaware vis-a-vis the Federal Government in the areas of its planning function.

In view of the foregoing, I must answer the questions raised in your letter and set forth above as follows:

(1) Yes, the Delaware State Planning Office does have the authority to represent and act for the State in dealing with the Federal Government under the Land and Water Conservation Fund Act of 1965.

(2) Yes, the Delaware State Planning Office also has the authority to receive and administer Federal funds under the Land and Water Conservation of 1965.

STATE OF DELAWARE
EXECUTIVE DEPARTMENT
DOVER

October 2, 1964

Mr. Edward C. Crafts, Director
Bureau of Outdoor Recreation
United States Department of the Interior
Washington 25, D.C.

Dear Mr. Crafts:

Thank you for your letter of September 8, 1964, and its attachments. It is a pleasure for this State to cooperate with the United States Government in this very worthwhile program.

Answering your request to designate "the name of the State Agency that will have authority to represent and act for the State in dealing with the Secretary for purposes of this Act," it is my decision to designate the Delaware State Planning Office to act in that capacity. Not only does the Director of State Planning currently act as the liaison officer for Delaware in this regard, but that agency is both practically and legally appropriate to carry out this effort.

Likewise, the Delaware State Planning Office is designated in connection with that portion of the Land and Water Conservation Fund Act stipulation: "Payments for all projects shall be made by the Secretary to the Governor of the State or to a State Official or agency designated by the Governor..." In this connection it is noted that the State Planning Office advises me regarding all acquisition of State property and prepares for my consideration and adoption the Six Year Capital Improvement Program for the State.

The State Planning Office will provide for you the additional information required in connection with Attachment A and B to your letter of September 8, 1964.

It is gratifying for us to participate in this important effort to conserve and utilize our State's and Nation's natural resources.

Sincerely yours,

Elbert N. Carvel
Governor

STATE OF DELAWARE
EXECUTIVE DEPARTMENT
DOVER

CHARLES L. TERRY, JR.
GOVERNOR

July 16, 1968

Dear Mr. Handley:

On October 2, 1964, Governor Carvel designated the Director of the Delaware State Planning Office as State Liaison Officer to serve in that capacity with the Bureau of Outdoor Recreation for purposes of the Land and Water Conservation Fund.

I hereby affirm the above designation. The State Liaison Officer is currently Mr. Rudolph F. Jass, Director of the State Planning Office.

I have authorized the State Liaison Officer to appoint a deputy and to assign to this individual the title of Deputy State Liaison Officer. The deputy would assume the full authority of the State Liaison Officer in his absence. Mr. David R. Keifer, currently the Technical Director of the State Planning Office would be appointed Deputy State Liaison Officer.

The State of Delaware has received many benefits through the Land and Water Conservation Fund. I trust that this situation will continue in the future.

Sincerely,

Charles L. Terry, Jr.
Governor

Mr. Rolland B. Handley
Regional Director
Bureau of Outdoor Recreation
128 North Broad Street
Philadelphia, Pennsylvania

CLT/raw

STATE OF DELAWARE
EXECUTIVE DEPARTMENT
DOVER

RUSSELL W. PETERSON
GOVERNOR

February 26, 1969

Mr. Rolland B. Handley
Regional Director
Bureau of Outdoor Recreation
128 North Broad Street
Philadelphia, Pennsylvania

Dear Mr. Handley:

I hereby reaffirm the designation of Mr. Rudolph F. Jass, Director of the Delaware State Planning Office, as State Liaison Officer with the Bureau of Outdoor Recreation for purposes of the Land and Water Conservation Fund.

Mr. Jass was originally designated by my predecessor, Governor Terry.

I would also request that Mr. David R. Keifer, a member of the Planning Department staff, be designated as Deputy State Liaison Officer.

Sincerely,

Russell W. Peterson
Governor

CP:nf

STATE OF DELAWARE
EXECUTIVE DEPARTMENT
DOVER

RUSSELL W. PETERSON
GOVERNOR

July 8, 1970

Mr. Rolland B. Handley
Regional Director
Bureau of Outdoor Recreation
U. S. Department of the Interior
1421 Cherry Street
Philadelphia, Pennsylvania 19102

Dear Mr. Handley:

I wish to notify you that Mr. David R. Keifer will become the Director of the Delaware State Planning Office effective August 1, 1970, following the resignation of Mr. Rudolph F. Jass. I hereby designate, effective August 1, 1970, David R. Keifer as State Liaison Officer with the Bureau of Outdoor Recreation for purposes of the Land and Water Conservation Fund.

I also am designating the Director of the State Planning Office to receive all reimbursements under the Land and Water Conservation Fund for land acquisition, development projects, and outdoor recreation planning. In this connection, it is noted that the State Planning Office advises me regarding all property acquisitions, administers State funds for acquisition projects, and prepares the Six-Year Capital improvements Program. The State Planning Office is both practically and legally appropriate to carry out the State's requirements under the Land and Water Conservation Fund.

Sincerely,

Russell W. Peterson
Governor

DELAWARE STATE PLANNING OFFICE

State Planning Office personnel who assisted in the
preparation of the Delaware State Comprehensive Outdoor Recreation Plan

David R. Keifer, Director

David S. Hugg III, Planner III

M. Kenneth Bessinger, Planner I

John C. Williams, Planner I

Cora Bonniwell, Magnetic Keyboard Operator II

Jayes E. Denney, Chief Draftsman

William F. Flemming, Draftsman III

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